

RADIO CONTROL

47380

car action

THE WORLD'S LEADING RC CAR MAGAZINE

Losi's Latest

XXXT

Tested by
racers like
you page 54

HOW TO Fast and
Easy Painting

DYNO TEST Trinity D4

TRACK TESTS
HPI Nitro RS42
Losi XX4 WCE
OFNA Pirate 10T
Altech Ignition
Racer

EXCLUSIVE FIRST TEST

Straight from Japan!

**Kyosho
SuperTen
FW-04**

MAY 2000
USA \$4.95
Canada \$5.95



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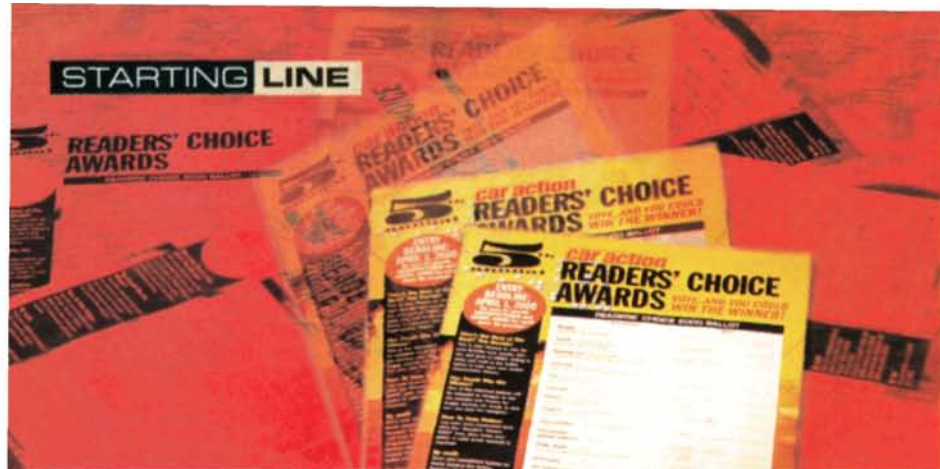
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STARTING LINE

READERS' CHOICE AWARDS

car action READERS' CHOICE AWARDS

car action READERS' CHOICE AWARDS

It's your magazine!

You've heard me say this before; in fact, it's one of my favorite things to tell readers. I wouldn't say it if I didn't believe it, and I believe it completely. Steve, Greg, Kevin, George, Chris and yours truly want to keep you stoked on RC every month, and we rely on you to let us know how we're doing and how we can do even better.

With that in mind, I encourage you to vote in our "Readers' Choice Awards" program. We printed the ballot in the April 2000 issue; if you don't have a copy, you can still vote online at www.rccaraction.com. While the main idea is to vote for the products you like best so we can publish the results and hand out some awards, there is an added level of interest for us as editors because if you like a product so much that you cast a vote for it, chances are you'd like to read about that product or something related to it.

Likewise, all the manufacturers will take a long, hard look at your picks as they try to determine what you really want. By voting for your favorites in the "Readers' Choice Awards," you're helping both your hobby and yourself. Did I mention that by voting you could also win the "Readers' Choice" top pick for buggy, truck, touring car, or pan car (your choice)? Now you're interested!

All righty; I'll climb off the soapbox. This month, we've got some stuff that I know you're already into, based on the amount of "RC Car Action Ruuuules!" email that we get.

We know you like homebuilt projects, so this month's "Homebuilt Traxxas Sprinter" should be a hit. In addition to clean construction and trick looks, this dirt-oval machine will serve as inspiration to anyone looking to get sideways. It won't be hard to convert just about any buggy or truck using the steps employed by builder Glen Oswald.

We know you like the inside line on the latest gear, and this issue puts two smokin' hot new vehicles to the test. First up: the Kyosho SuperTen FW04. The original SuperTen dominated the "Super Car Shootout" in the '99 edition of our *Touring Car* special issue, and the FW04 looks even faster! We flew one in from Japan so we could show it to you first (actually, Steve Pond just wanted it really, really badly and, as a side benefit, you get to see it first).

On the off-road side, everyone has been wondering how the Team Losi Triple-XT would handle after we scoped it in last month's "First Look." Wonder no more; you'll find First Drive: Team Losi Triple-XT between these covers. Here's the short version: it rocks!

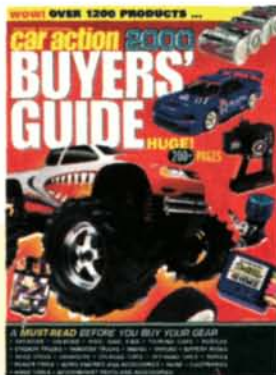
On a final note, I encourage you to check out the new "Racer News" format, which has been tweaked based on your input (remember, you run the show).

See you next month.

Peter Vieira

Peter Vieira
Executive editor

Shop smart! Pick up a copy of the 2000 Radio Control Car Action Buyers' Guide before your next spending spree. This year's Guide is the biggest ever, with over 1200 product listings. Cars, trucks, tires, ESCs, motors, engines, and more ... it's all in there!



RADIO CONTROL car action

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Home Wrecker

Hi; I'll make this as quick as possible. What is the best electric truck (under \$300) for jumping in the house? I have a 20x15-foot room. [email]
MICHAEL BENEFIEL

Ah, OK, Michael. I think a Traxxas Stampede with a Trinity Speed Gems Zircon motor and 12 cells would be just about perfect. By the way, I know a great drywall contractor, in case you ever need one.
—Pete

Too Much Motor

In "Readers' Rides" (December '99), I read that Eloy Valles has an HPI RS4 with a DuraTrax Blast ESC and a 14-turn motor. Isn't a 14 turn too hot for the Blast? I have a Traxxas Rustler with the stock mechanical speed control (MSC) and a 20-turn Stinger motor; I'm thinking about getting Trinity's Chameleon Pro motor. Will it mess up the MSC? [email]
RANDALL SMITH

Randall, you obviously paid more attention to the Blast's specs than Eloy did! The DuraTrax Blast is meant for use with stock motors, but as with any ESC that has a "motor limit," the suggested motor is just that—a suggestion. As long as the motor is properly geared (in a nutshell: gear lower for hotter motors), and you don't do dumb stuff such as jamming the motor or driving through tall grass, you can usually use a hotter motor than the manufacturer recommends. (Eloy, if you're reading this, don't go any lower than 14 turn.)

The Trinity Chameleon is a 19-turn motor and will work just fine with your MSC.
—Pete

What Else Do I Have to Buy?

I'd like some information on the HPI RS4 MT. I'm new at this car-buying thing and would appreciate your telling me what I need to buy in addition to the kit. I don't want to get a combo because I already have a charger and battery. Please mention everything I need, right down to the last screw. I want to get a car with reverse and with a body so I won't have to build it.
CHRIS WRIGHT
Raymond, OH

Chris, I'm answering this letter for you and for all the other readers who are dreaming of joining the hobby but really don't have a handle on how it "works."

All the kits we review include a "You'll Need" list that details the stuff you'll need (duh) to run the kit. For many electric vehicles, such as the HPI RS4 MT you're interested in, the list includes a motor, a transmitter set that includes two servos or one servo and an ESC (you'll need an ESC for the MT), eight AA batteries for the transmitter, CA glue to install the tires, polycarbonate-compatible paint to finish the body, a battery and a battery charger. Only a few ready-to-run (RTR) kits include these items along with factory-painted bodies; the Pro-Trax Stampede and Rustler include everything except the charger, car battery and radio batteries. MRC offers the SP3 Extreme on-road kit as well as the off-road Thunder King, Ironman and Hammerhead trucks complete with everything you need, except for the transmitter batteries.
—Pete

Restless Rustler

I just bought a Traxxas Rustler and am returning to RC. I plan to mess around in my backyard and race at local tracks. Is this a good truck? Is it competitive? Can it be upgraded? [email]
BRIAN

The Rustler is a dynamite truck for play, but it isn't really hooked

competition stock motor and a set of competition tires (the track owner will tell you which trends to use). You'll also need a forward-only ESC (or a reversing unit with reverse-disable). Keep in mind, you'll need this gear to be competitive, but if you want to race your truck bone-stock to get a feel for RC racing before you spend more money, go for it. For an in-depth look at a totally maxed-out race Rustler, check out the "Project Rustler" that Greg Vogel put together (October '98 issue). If you don't have the issue, call (800) 877-5169 to order a copy.
—Pete

Go Away from the Light

I just read the "Troubleshooting" letter regarding radio glitching (March 2000). It seems as if once you have a glitch, it takes everything you have to get rid of it. And you're right: it's usually a bad connection somewhere, but just trying to find it can take an afternoon.

I noticed you didn't mention one very important cause of glitching: fluorescent lights. When I'm in my basement working on my car, the fluorescent lights cause glitching. Even our local track switched from using these lights. I've heard that this is a common cause of radio glitching, mainly because fluorescent lights "flicker" at 60Hz—too fast for most of us to really see. [email]
DAVE LAMB

WRITE TO US! We welcome your photos, drawings, comments and suggestions. Letters should be addressed to "Letters," Air Age Inc., Radio Control Car Action, 100 East Ridge, Ridgefield, CT 06877-4606. Letters may be edited for clarity and brevity, and each must include a full name and address or telephone number so that the identity of the sender can be verified. We regret that, owing to the tremendous numbers of letters we receive, we can't respond to every one.

EMAIL ADDRESSES:

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Steve Pond: stevep@airage.com
Peter Vieira: peter@airage.com
Greg Vogel: gregv@airage.com

lights, but it behaves well elsewhere, blame the lights—not your gear.
—Pete

New Losi 4-Wheeler?

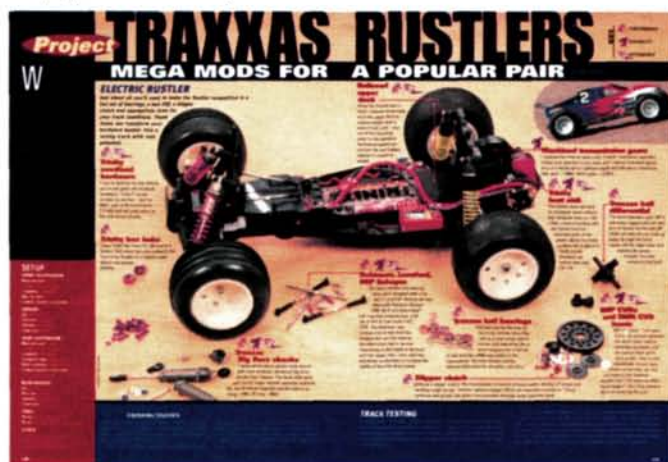
Hey, do you know whether Team Losi plans to come out with a Triple-X4? They already introduced the Triple-X and the Triple-XT, so if you know anything, please tell. [email]
GOVOIGHT

I wouldn't count on it. Losi launched the World Cup version of the car to commemorate Jukka Steenari's IFMAR 4WD title, so it isn't as if the Double-X4 can't win races. I imagine Losi will continue to provide tweaks here and there, but an all-new 4WD car has to be a long way off. I could be wrong, but my Magic 8 Ball is saying "No."
—Pete

Old School Guys: Chad Needs your Help!

I have searched the Internet, and I can't find the white plastic parts I need to finish restoring my original, 6-gear RC10 buggy. I need part numbers 6334 (battery cup), 6336 (servo mount) and 6474 (spring clamp and cup—white). If you guys could help me find them I would greatly appreciate it. [email]
CHAD

Chad, there has to be a shop somewhere with those parts tucked away. Maybe someone reading this right now knows where the parts are! Anybody want to help Chad out? Email him at cglennie@hotmail.com.
—Pete ■



up for competition—not straight out of the box, that is. If you plan to race, I suggest you run in the stock class and upgrade the truck with a full set of ball bearings, a

I can't confirm the 60Hz flicker rate, but I believe you're correct in blaming fluorescent lights for some glitches. If there's glitching only when a car is near such

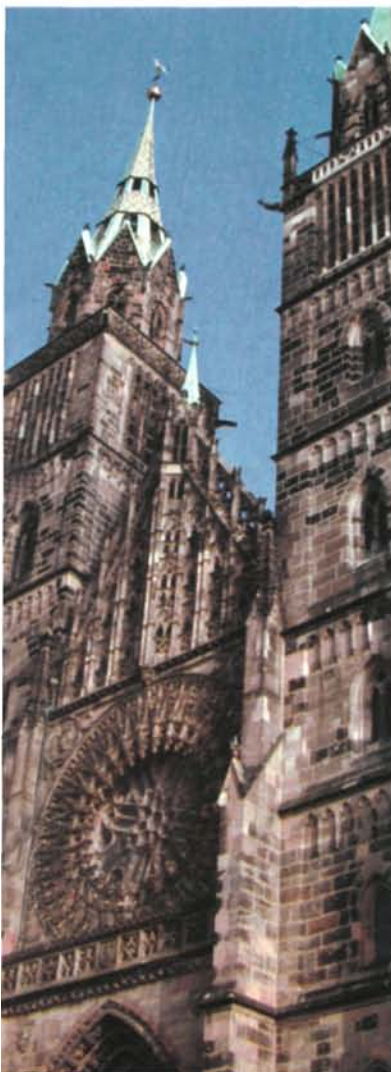


BY CHRIS
CHIANELLI

Das Scoop:

Hot stuff for summer from the Nuremberg Show

This month, I'm turning "Scoop" over to senior editor George Gonzalez. Why does the G-Man get to take the reins? Because he just got back from Germany with info on all the latest gear shown at the Nuremberg Hobby Show, that's why! Along with the hottest releases soon to appear on hobby-shop shelves, George has some wild Euro scoops that are sure to grab your attention; dig in.



JUGGERNAUT 2

The Jugg's original Ford F-350 hard body returns with "Juggernaut 2" graphics, but the leaf-spring suspension setup is the same. The real story is in the drive train: basically, everything between the Jugg 2's motors and tires is larger or made of stronger stuff—or both. That's good news, because we're going to beat the stuffing out of it as soon as we get one. The parts required to upgrade the original version of the Juggernaut will reportedly be available at a discounted cost to current Jugg owners. Expect to see the Jugg 2 in stores by early spring.

TAMIYA

CX-12 NOVAROSS ENGINE

Tamiya has joined the ranks of the nitro racing elite with its own version of the NovaRossi .12 powerplant. Tamiya plans to make the engine available with the TG10 and TGX cars for hardcore competition. The CX-12's distinguishing features are its red-anodized cylinder head, slide carb and trademark Tamiya logo cast into its crankcase. Optional parts for the TG10 can be installed to provide clearance for the slide carb, but it's a drop-in installation for the TGX.



QD SPORTS 1/10 RTRs

This Martini Ford is the latest in a group of Quick Drive (QD) RTRs from Tamiya (the included transmitter is seen peeking out from behind the rear bumper). They are designed to run with a 9.6V AA Ni-Cd pack and offer an inexpensive entry point for first-timers that's backed by Tamiya's reputation for high quality.

Tamiya America Inc., 2 Orion, Aliso Viejo, CA 92656-4200; (800) TAMIYA-A; fax (949) 362-2250; www.tamiya.com.





RC Surfer

This was one of the most popular products at the show. It's a prototype of Kyosho's new Surfer, which is scheduled to be released later this year. It will reportedly have a high-performance, surface-drive system and will be self-righting. Stay tuned for more information.

Kyosho/Great Planes Model Distributors, P.O. Box 9021, Champaign, IL 61826-9021; (800) 682-8948.

PureTen Alpha EP/GP

The PureTen Alpha is a new chassis design that will be available as a "Ready Set"—

Kyosho marketing-speak for "ready to run"—in both nitro and electric versions.

The nitro version features shaft drive, a Kyosho .12 GS-R pull-start engine, full radio gear, 100-percent assembly and a painted body. The electric version sports a rear gearbox and a single belt for the front drive system. It features the same level of assembly as the nitro car, so it's a snap to go from box to backyard. The electric version was also displayed with a 6-cell battery and charger, and that leads us to believe it will include these items as well. If it does, it will be one of the most complete RTRs on the market.

KYOSHO



Ultima ST ready to run

Kyosho introduced the second half of its assault on the RC truck market with the Ready Set (RTR) Ultima ST in nitro and electric versions. Both trucks will be equipped with Kyosho's new Perfex radio system and will be fully assembled with a painted body and Pro-Line tires. Though not as loaded as the more expensive racing models, both RTRs can easily be upgraded to match the performance of the "Type R" kits.



Sticky Stuff

Now Available, The Same Glue Brian Uses To Put His Multi-Stage Inserts Together And To Glue His Tires To The Rim!



TK3701 Bead Loc Thick Slow Drying, \$7.50

TK3700 Bead Loc Thin Fast Drying, \$7.50

TK3504 The Bomb Insert Glue, \$7.50

www.teamtrinity.com

TEAM Kinwald TRINITY

Robitronics Spirit Programmable ESC

Robitronics, which is well-known for its premium-quality motor dyno, has introduced a high-end ESC for discriminating racers. The Spirit digital ESC has an LCD display that makes it easy to alter or verify your setup. Adjustable settings include power delivery, brake volume and drag brake, among others. The Spirit also features push-button setup and a plug socket for a PC interface. Presumably, the optional PC interface will allow you to store and modify the ESC's settings.

Robitronics; distributed by Trinity Products Inc., 36 Meridian Rd., Edison, NJ 08820; (732) 635-1600; fax (732) 635-1640; www.teamtrinity.com.

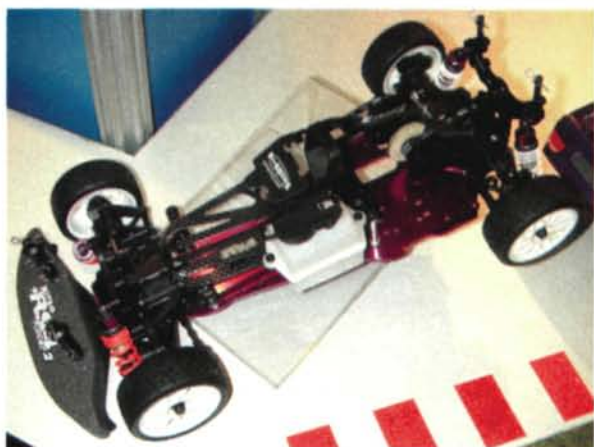


HPI NITRO RS4 RACER 2

The long-awaited HPI Nitro RS4 Racer 2 was formally introduced in Germany. This prototype shows a graphite upper deck, aluminum Super Shocks, aluminum lower chassis plate with countersunk screw

holes, a roll-center kit, fiber disc brake and the all-important Pro 2-style suspension with upper arms instead of upper links. This particular car is just a prototype and will eventually have a different upper chassis plate and a redesigned fuel tank that will sit lower in the chassis. Some of the production model's other equipment may also be different, but at least we now know it's coming for sure!

HPI Racing, 15321 Barranca Pky., Irvine, CA 92618; (949) 753-1099; fax (949) 753-1098; www.hpiracing.com.

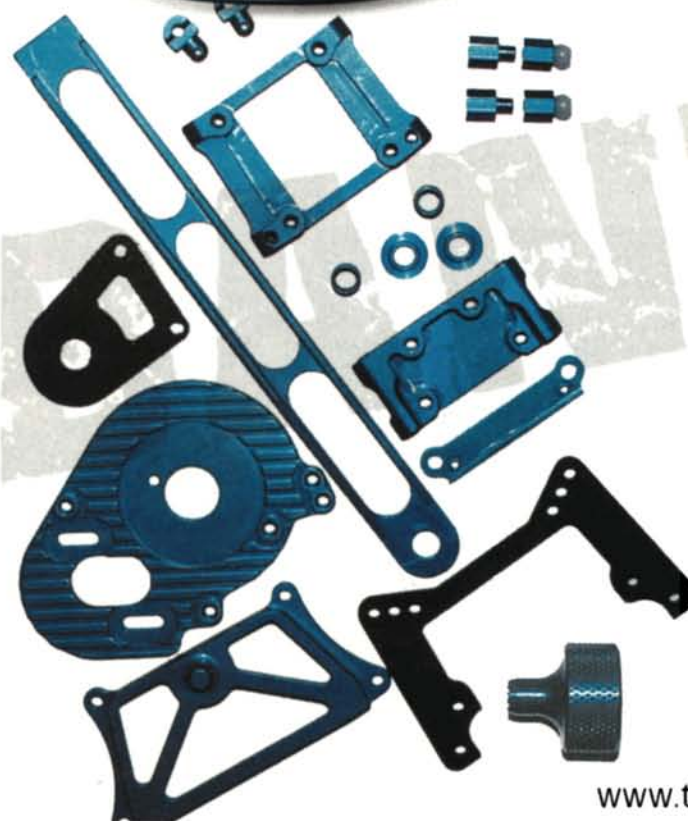


RS4 SPORT 2

For budget-conscious racers who want the best features of the RS4 Pro 2 but don't have the funds to buy one, HPI introduces the Sport 2. It features a fiberglass chassis, molded shock bodies, dogbone drive shafts, gear differentials and stick- or saddle-pack adaptability. Unlike the original Sport, which used metal bushings, the S2 includes full ball bearings.



a la TEAM Kinwald



TK5008	Blue Aluminum Battery Strap	\$19.99
TK5009	Blue Aluminum Lower Front Bulkhead	\$29.99
TK5010	Blue Aluminum Upper Servo Brace	\$29.99
TK5011	Blue Aluminum Rear Body Mounts, 1 Pair	\$17.99
TK5012	Blue Metal Flake Graphite Front Shock Tower	\$15.99
TK5013	Black Kydex Transponder Mount	\$2.99
TK5014	Blue Aluminum Shock Bushings, Front And Rear	\$7.99
TK5015	Blue Aluminum 0 Degree Rear Pivot Blocks	\$29.99
TK5016	Blue Aluminum 2 Degree Rear Pivot Blocks	\$29.99
TK5017	Blue Aluminum Servo Mounts, 1 Pair	\$19.99
TK5018	Blue Front Brace With Sway Bar Mount	\$11.99
TK5019	Front suspension brace with slot that fits XX front sway bar wire. Blue Adjustable Rear Sway Bar Mounts	\$14.99
	Uses Losi sway bar wires. Adjustable to easily change wire length to fine tune your handling without changing the wire diameter.	
TK5020	One Piece Rear Wing Clip, 3 Pieces	\$4.99
	Special long blue clip that goes through both the rear wing mounting posts.	
TK5022	Blue Aluminum Motor Plate, Same As In Kit	\$10.99
TK5023	Blue Aluminum Heatsink Motor Plate	\$25.99
TK5024	Blue Aluminum Screw Kit	\$18.99
TK5025	Blue Aluminum Axle Bearing Spacers, 4 Pieces	\$9.99
TK5026	Blue Aluminum Rear Arm Brace	\$8.99
TK5027	Blue Aluminum Slipper/Shock Wrench	\$21.99
	Allows slipper adjustments without removing the rear tire. Tightens shock mounting nuts without scratching shock body.	
TK5028	Blue Titanium Tie Rod Set	\$26.99

www.teamtrinity.com

TRINITY

ROBBE



GABLE STAPLER LINDE H50 FORKLIFT

This is part of the Cargo Line, too, so it's $\frac{1}{16}$ scale and 12V powered. It can lift its scale weight with the chain-driven fork and will turn 360 degrees on its own axis, just like the real thing.



CARGO LINE

Here's proof that RC machines don't have to be fast or loud to be really, really cool! The Robbe Renault Magnum and Man S2000 are both $\frac{1}{16}$ scale and operate on 12V power systems. A special ESC designed for continuous low-speed operation is used for throttle control, and the $\frac{1}{16}$ scale trucks are super detailed; they include full interiors, and optional lights and sound kits can be fitted. The trailers are also remotely detachable, and $\frac{1}{16}$ scale pallets and "cargo" are available. In Germany, entire cities have been constructed in $\frac{1}{16}$ scale for the trucks to "live" in. How cool is that?

PICCO INTEGRA TOURING

Picco's Rally Game entry is built on the Integra on-road platform, and that should put it in a class all its own. Despite the "rally" connection, Rally Game races are run on pavement, so the Integra's on-road roots should help it keep ahead of the $\frac{1}{8}$ -scale buggy-based machines of other manufacturers. Rally Game hasn't hit it big here yet, but get ready; a wave of interest could hit our shores soon!



GPM TC3 anodized hop-ups

You don't have to go to Germany for these (and other) GPM goodies; Hobby Etc. offers just about every CNC'd widget the company offers! Here, a decked-out TC3 shows off GPM's arms, arm mounts, battery brace/heat sink, motor mount/heat sink, hubs, steering knuckles, Delrin outdrives, steering rack, graphite shock towers and front braces (rear braces are available, too). The arms and hubs pivot on replaceable nylon bushings for long wear, and the parts look great with their "silver lining" and blue anodizing.

GPM; distributed by Hobby Etc., 90 West Pearl St., Nashua, NH 03060; (603) 595-8549; fax (603) 595-1498.

TTR

You can expect UN-limited performance from this all-the-hop-ups version of TTR's already impressive $\frac{1}{8}$ -scale off-road machine. The kit includes a short racing bumper, ball-bearing steering, three sets of springs and Teflon pistons. The kit also features many parts constructed of Ergal—a hard aluminum alloy; these include steering arms, upper arm mounts, front and rear shock towers, hinge-pin braces, steering slider and toe-in blocks.



EB-4 Limited



TS-4n Pro

TTR's launch of the TS-4 Series represents the company's first foray into competitive nitro touring. The TS-4n Pro is the top-of-the-line model. It features a close-ratio 2-speed tranny, front and rear swaybars, 3mm Ergal chassis, finned aluminum engine mounts, one-way front diff, front and rear universal axles and machined-aluminum side-belt tensioner. The upper deck, shock towers and brake disc are carbon fiber. Perhaps the car's most interesting features are its quick-release wheels, which will allow no-tool tire swapping—very nice.

TTR; distributed by Thunder Tiger USA: Ace Hobby Distributors Inc., 116 W. 19th St., Higginsville, MO 64037-0472; (660) 584-7121; fax (660) 584-7766. ■

Win a \$500 gift certificate from DuraTrax! Send a sharp, uncluttered, well-exposed color photo of your vehicle (no Polaroids), and a brief description, to Readers' Rides, RC Car Action, 100 East Ridge, Ridgefield, CT 06877-4606 USA. If we publish your photo, you'll receive a free RC Car Action decal sheet and will be eligible to win a \$500 gift certificate from DuraTrax in the "Readers' Rides of the Year Contest." Write your address and phone number on your letter and on the back of every photo you send. Good luck!

Readers' Rides

Terry Sturchio
Cheney, KS

Associated RC10L20

Terry equipped this RC10L20 with an IRS axle, a Racetech left hub and a Racetech adjustable-caster titanium-pin kit. He runs it using a Futaba Magnum Junior radio. The car also features a Novak Explorer ESC and a Reedy Rage motor with Kimbrough spur and Robinson pinion gears. Terry hand-painted the Protoform '98 Monte Carlo HS body to look like race driver Casey Atwood's car. Scale effects in the photo make it look as though the car is "not in Kansas anymore" but at the Nashville Speedway.

NASHVILLE SPEEDWAY



Anthony Durand
Utica, MI

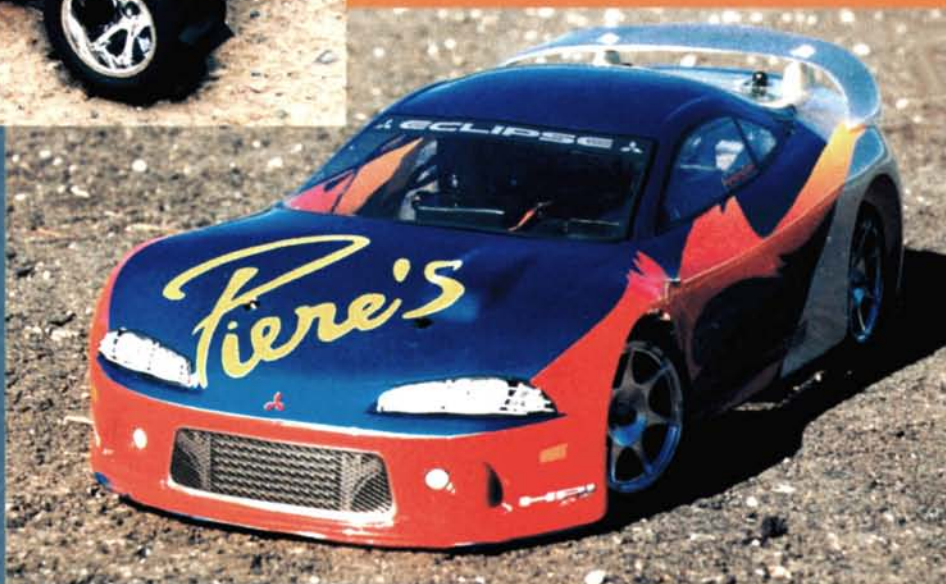
RS4 MT

This RS4 MT features a Novak Super Rooster ESC, a Reedy 12TD Tri-Sonic motor, heat sink motor plate and a DuraTrax ball-bearing set. Pro-Line Sand Paw tires and RPM wheels provide all the traction needed to get this bad boy around. Anthony custom-painted the body.

Eric Haverstick
Fort Wayne, IN

Traxxas 4-Tec

Hop-ups on this 4-Tec include Traxxas Big-Bore shocks with Losi orange springs, front and rear swaybars, HPI rims and tires, Traxxas XL-1 speed control and a Trinity Paradox motor. Eric, who goes by the nickname "P-Nut," controls the car with a JR Python radio.



Scott Mohr
Northport, NY

Associated TC3 Team Kit Car

A Novak XXL receiver, Novak Cyclone TC speed control, Trinity P2K Pro motor and Futaba S9303 steering servo are among the items Scott put into this car. A custom-molded Honda S2000 carbon-fiber body completes the look; truly impressive, Scott.

Daniel Martin
Tarzana, CA
Traxxas Nitro 4-Tec

Daniel customized his car with an OFNA header, HPI tuned pipe, Yokomo shocks, Traxxas swaybars, fiber disc brake and full ball bearings. Pro-Line X-pattern radials do the gripping on Gumby rims. Daniel controls the car with an Airtronics XL2P radio.



Matt Lockwood
Collegeville, PA
Tamiya TL01
and Associated T3

Both of these machines run on Futaba Magnum radios and Futaba servos. The TL01's extras include a Midnight motor, Tekin Rebel speed control and Deans Ultra plugs. Matt's TL01 is topped off by its stock Ford F-150 Lightning SVT body. His dad's T3 features an FMA speed control, Reedy Firehawk motor and Ultra plugs. RPM Talonz wheels and Pro-Line SpeedHawks tires help keep it rolling.



Oscar N. Contreras
Burbank, CA
Harm 1/5-Scale

Using airbrush techniques he found in an issue of *Radio Control Touring Cars*, Oscar painted this hot rod at his Burbank, CA, home. He says he chose the KISS theme because people of all ages recognize this rock group. Beth, er ... track, I hear you calling.



Aaron Richards
Ontario, CA
HPI Nitro RS4

This sharp-looking nitro car is the work of Aaron Richards. An O.S. CV-X engine with MIP boost bottle and blue-anodized O'Donnell head powers the car. Beneath the HPI Audi A4 body is an HPI 2-speed transmission, MIP Shiny CVDs, Alien gear-shaft brace/belt tensioner and custom three-chamber silencer exhaust.



sponsored by **DURATRAX**

Pit Tips

ILLUSTRATIONS BY
JIM NEWMAN

WIN A FREE 1-YEAR SUBSCRIPTION! Radio Control Car Action will give a one-year subscription (or an extension of your existing subscription) for each of your ideas used in "Pit Tips." Send a sketch and description of your idea to "Pit Tips," c/o Radio Control Car Action, 100 East Ridge, Ridgefield, CT 06877-4606 USA. BE SURE YOUR NAME AND ADDRESS ARE CLEARLY PRINTED ON EACH SKETCH, PHOTO AND NOTE YOU SUBMIT. We're unable to publish many good tips because we don't have the sender's name and address. Please note: because of the number of ideas we receive, we can neither acknowledge every one, nor can we return unused material.



Simple Screw Insertion

Use a piece of fuel tubing to grip a screw or hex fastener in your driver, and you'll easily be able to insert it into tight spaces.

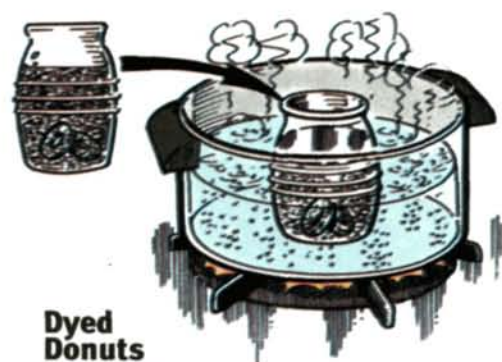
ERIK NELSON
Midland, MI



RS4 Rear Belt Tensioner

Make this tensioner by bending aluminum or brass stock. Add a roller made with a spare bearing, then bend the arm to increase tension. As Curtis says, "Looks crazy, but it's effective!"

CURTIS BROOKS
Las Vegas, NV



Dyed Donuts

The fluffy white foam donuts that keep dirt out of ball joints are effective, but they don't look very racy. You can easily dye them black. If you're not mixing them in with other, larger parts, you can use a baby food jar as the "dye vat." Place the open jar in a saucepan half-filled with water, and then boil the whole lot.

HARRY SWANSON
Chicago, IL



Wing Mount works for Pipes, too

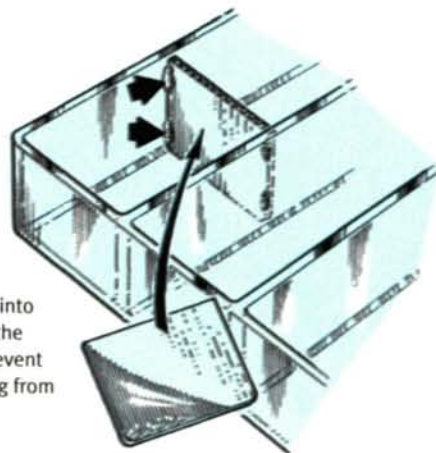
Replace the wire eyelet, screw and nut setup on your RC10GT (or any similar vehicle) with a pan-car wing mount and a custom-made music-wire stay. The pipe will stay put, yet you'll easily be able to remove it for maintenance.

JOE VESTAL
Bristol, VA

Smaller Spaces

Sometimes, even the smallest sections of your pit box are too large to keep small parts in place. Make dividers by trimming larger dividers or scrap Lexan pieces to fit the space you need, then glue them into place. Run a bead of glue along the bottom edge of the divider to prevent washers and shims from creeping from one compartment to the next.

LUKE FAILLA
Merlin, OR



Stand-Up Pull-Starter

Pull-starter handles that use a section of fuel tubing as a standoff tend to flop around; when you need to grab them, you usually find them tucked under a hot manifold. To keep that handle standing at attention, replace the tubing with a section of ballpoint-pen shaft.

DAMION HERTZOG
Tucson, AZ

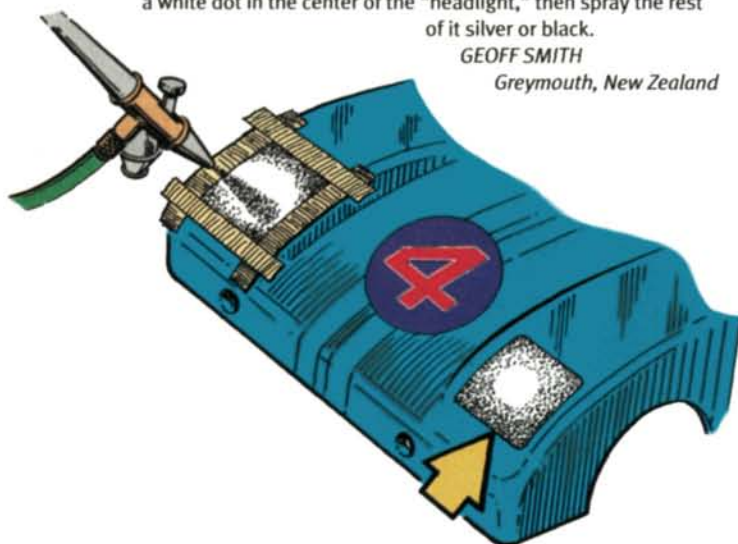


Pit Tips

Simulated Headlights

If your car body doesn't include headlight decals, you can paint on realistic-looking headlights using an airbrush. Use a fine tip to spray a white dot in the center of the "headlight," then spray the rest of it silver or black.

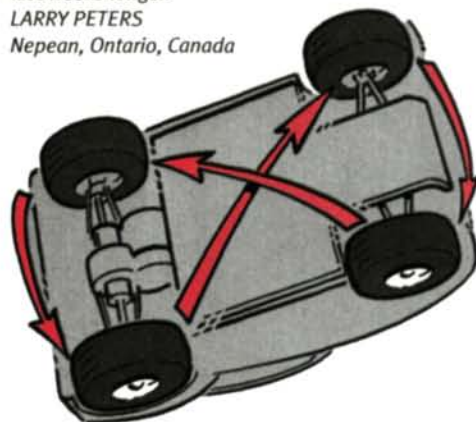
GEOFF SMITH
Greymouth, New Zealand



Tire Rotation

If your RC car has four identical tires, you can maximize their life by rotating them as you would a full-scale car's. It will take only a minute or two, but they'll last weeks longer.

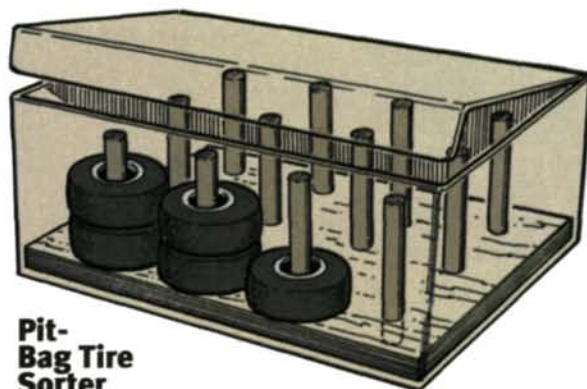
LARRY PETERS
Nepean, Ontario, Canada



For Minimum Friction, Go Greaseless

To minimize drag, remove the seals from your shielded bearings by releasing the fine circlip that holds them in place (use the tip of a hobby knife for this). Then clean out the grease by spraying the bearings with motor spray (RPM's bearing cleaner works very well.) Relube the bearings with light oil, and then reinstall the shields.

RICE PONDE
Ithaca, NY



Pit-Bag Tire Sorter

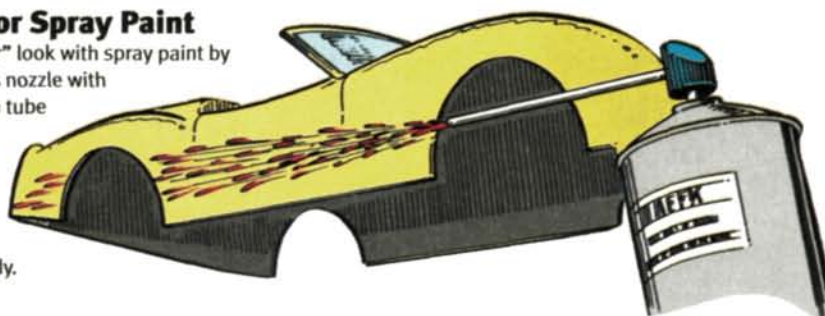
If you have a Trinity cargo bag—or any track bag that uses internal cardboard boxes—you can easily add a tire rack. Cut a 1/4-inch-thick piece of plywood to match the floor of one of the boxes, and drill 15/64-inch holes in it as shown; glue 1/4-inch dowel into the holes to hold your tires. Paint the tops of the dowels to match the colors of your tire compounds.

ANDY HIDLEY
Mountain Top, PA

Spatter Effect for Spray Paint

You can create a "spatter" look with spray paint by replacing the spray-can's nozzle with the nozzle and extension tube from a can of motor spray. Spray a burst of paint through the extension tube to clean it out before using it to paint your body.

J.B. MALLOY
New York, NY



sponsored by

Troubleshooting

BY PETER VIEIRA • ILLUSTRATIONS BY JIM NEWMAN

If you have a technical problem that your hobby shop or racing friends can't resolve, give us a shout at *Radio Control Car Action*, and we'll see if we can chase down an answer for you. Questions should be of a technical nature and should be addressed to *Troubleshooting*, *Radio Control Car Action*, 100 East Ridge, Ridgefield, CT 06877-4606. We regret that, owing to the tremendous number of letters we receive, we can't respond to every one.

Gear Stripping Solved, Part 1

I was given an RC10 GT about three years ago, and I have really enjoyed playing with it, but it seems to have a problem. It has stripped the spur gear twice, both times when I went from stop to full throttle. The gear mesh was set correctly before and after it stripped. I checked to see if the mounting bolts were loose, but they were so tight that I had to use pliers to loosen them. I think the gear is stripping because the chassis is flexing; I heard the RC10 GT has that problem. I saw in your magazine a part that connects the engine mount to the transmission, but now I can't find the issue or the part. Can you help me find the part, or something that will fix this problem. [email]

WICKITYWACKD

True, the GT is known for flex in the tail section, but it's hardly a guarantee of stripping problems. First, check all the fasteners in the rear end of the car. If the tranny is loose, that can't be helping. If

everything is tight, check that gear mesh again. I think you know what you're doing, but I'm always surprised by how many hobbyists think the best way to prevent gears from stripping is to mash the pinion against the spur. If the gear mesh really is properly set (that is, with just a "tick" of free play

between the gears), you can increase durability by swapping the plastic gear for Robinson Racing's steel version (RRP2365) that is sold along with a matching clutch bell.

For ultimate durability, you could also add Trinity's Team Kinwald aluminum engine mount/chassis stiffener (TK1200). Add these parts, and continents will move before you strip another gear.



Gear Stripping Solved, Part 2

I've been having problems with the spur gears on my Traxxas Rustler. I have put flat spots on four spur gears, and I've only had the truck about two weeks. I went through the tranny and checked the lube, and everything else is fine. I use a Trinity D3.5 6-turn single with a 14.28 gear ratio. I think the motor might be too torquey. Is there a company that can custom-machine an 84-tooth, 48-pitch spur gear made of steel, or even titanium?

DAN WILLETT
Collins, NY

Daniel, I'm all for more speed and power, but 6 turns in a Rustler? That's just too much motor. Even if you had a hardened-titanium spur gear, your truck would just chew up pinions. When you pull the trigger on that hand grenade of a motor, the loads on the teeth of the pinion and spur gear are huge; those parts have to overcome the inertia of more than 3 pounds of truck as they translate the motor's torque into forward motion. Even if held in perfect mesh with the pinion, it is highly likely that the spur gear's teeth will shear rather than move the vehicle. The Rustler's plastic motor plate exacerbates the problem by flexing and allowing the pinion and spur gear to shift out of proper mesh. When that happens, it's adios spur gear.

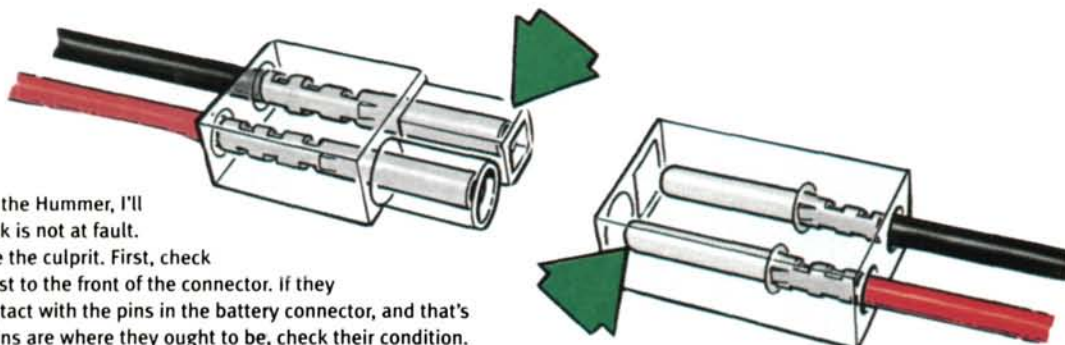
I realize you spent a lot of dough on that D3.5, so I'll resist the urge to tell you to shelve it in favor of a nice, 17-turn machine-wound mod. But I will insist you get a slipper clutch for your Rustler (Traxxas part no. 4615). You'll still have way too much motor for your truck, but the slipper will spare your gears. (Note: new Rustlers now include a standard slipper clutch and ball bearings in the tranny.) Also, you should gear the truck as low as possible; install a 17-tooth pinion and the largest spur gear the tranny can accept.

Troubleshooting

Connector Meltdown

I have been building trucks for only a year; I have the Tamiya Hummer, Tamiya Mu (Amigo) and Traxxas Stampede. I run an RC-1700 pack in all my trucks, but when I run it in my Hummer, the positive terminals get too hot and they fuse together. The white part on the outside burns black, and the two pins stick together; I have to use pliers to part them. I have no hop-ups in the Hummer and run the stock 540 motor.

JEFF GUERNSEY
Arlington, TX



Since the problem occurs only in the Hummer, I'll assume the connector on the pack is not at fault.

The Hummer's connector must be the culprit. First, check the pins; they should reach almost to the front of the connector. If they don't, they aren't making full contact with the pins in the battery connector, and that's causing them to heat up. If the pins are where they ought to be, check their condition. The pins should look like narrow tubes; if they're splayed open, you have another contact problem. You could try to pinch them back together, but I advise you to junk the Tamiya-style connectors altogether and replace them with "red and black" connectors from DuraTrax or Acer Racing, or Deans connectors. Any one of these choices will be much more efficient than the Tamiya plugs, and the aftermarket plugs won't heat up even if you install "hot" motors in the future.

Unequaled Precision

Absolute Series Spurs



Available in 48P in 80T thru 91T, this is the quietest spur you can buy!
RRP 1780 - RRP 1791

B3 / T3 Lite Aluminum Outdrives



Blue anodized and 40% lighter than stock ball diff outdrives.
RRP 1502

Absolute Series Pinons



Available in 48P in 16T thru 28T sizes. Super hard, lightened and cut unmatched precision. Great with any spur, but with an Absolute spur, even on-off noise is gone!
RRP 1416 - RRP 1428.

Unsurpassed Reliability

Outstanding Performance

Associated Blue Lightened Slipper Kit



The rear plate is hard anodized to reduce wear and the front plate is color treated. The front plate is designed to hold the slipper pad forcing the pad to slip on the rear plate. When pad shows sign of wear just flip it over for a new surface. Metal parts are CNC machined for a flawless fit. RRP 1515

RC10-GT Gas Spurs

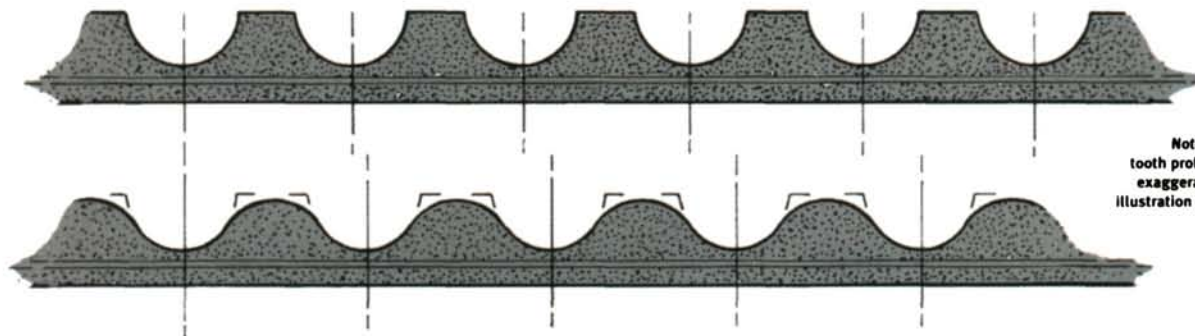


Super tough and precision machined from heat-resistant plastic, these spurs mesh flawlessly with our Clutch Bells. 32P spurs in 54T thru 67T, RRP 2261 - RRP 2267, and 32P bells in 14T (New) thru 24T, RRP 2214 - RRP 2224.

Belt Skip Blues

I have a Kyosho TF-3 with a front belt that started skipping shortly after I got it. I made a belt tensioner for it as described in your Touring Car issue, and that fixed it for a while, but it's skipping again. What can I do? [email]

JOHN CHAN



Note:
tooth profiles are
exaggerated for
illustration purposes.

John, belts don't last forever; I suspect you simply need a new belt. As you run your car, the belts stretch. As they stretch, the spaces between the teeth get larger. In addition, the teeth themselves wear, losing their crisp shape. Eventually, the combination of worn teeth and wider spacing makes it impossible for the belt to hold the pulleys effectively. There is also the possibility that the diff and layshaft pulleys have worn enough to contribute to the belt's skipping; I would replace the pulleys and belts to be sure. ■

Superb Quality

RC10-GT Steel Combo



Precision machined one-at-a-time from a single piece of steel and then hardened this 65T spur and 15T bell combo will last and last. The extra-hardened clutch bell fits ALL Associated and MIP shoes. RRP 2365

Associated Titanium Stealth Top Shaft



CNC Machined from a single piece of titanium, this super hard, super light top shaft will fit any Stealth transmission. No serious racer should do without this part. RRP 1512.

Intelligent Innovation

RC10-GT Hardened Steel Idler Gear



Cut from solid steel stock, this gear is lightened and then hardened for super quiet precision and extra long life. Jamin' tranny grease is included. RRP 2213

Thoughtful Design

RC10-GT Hardened Diff Gear



Hard anodized, precision machined aluminum diff gear. RRP 1513



1999 World Cup and National Champion

"I only care about performance, and that's why I run Robinson Racing gears and slipper clutches exclusively."

— Richard Saxton



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Like the buggy— only better

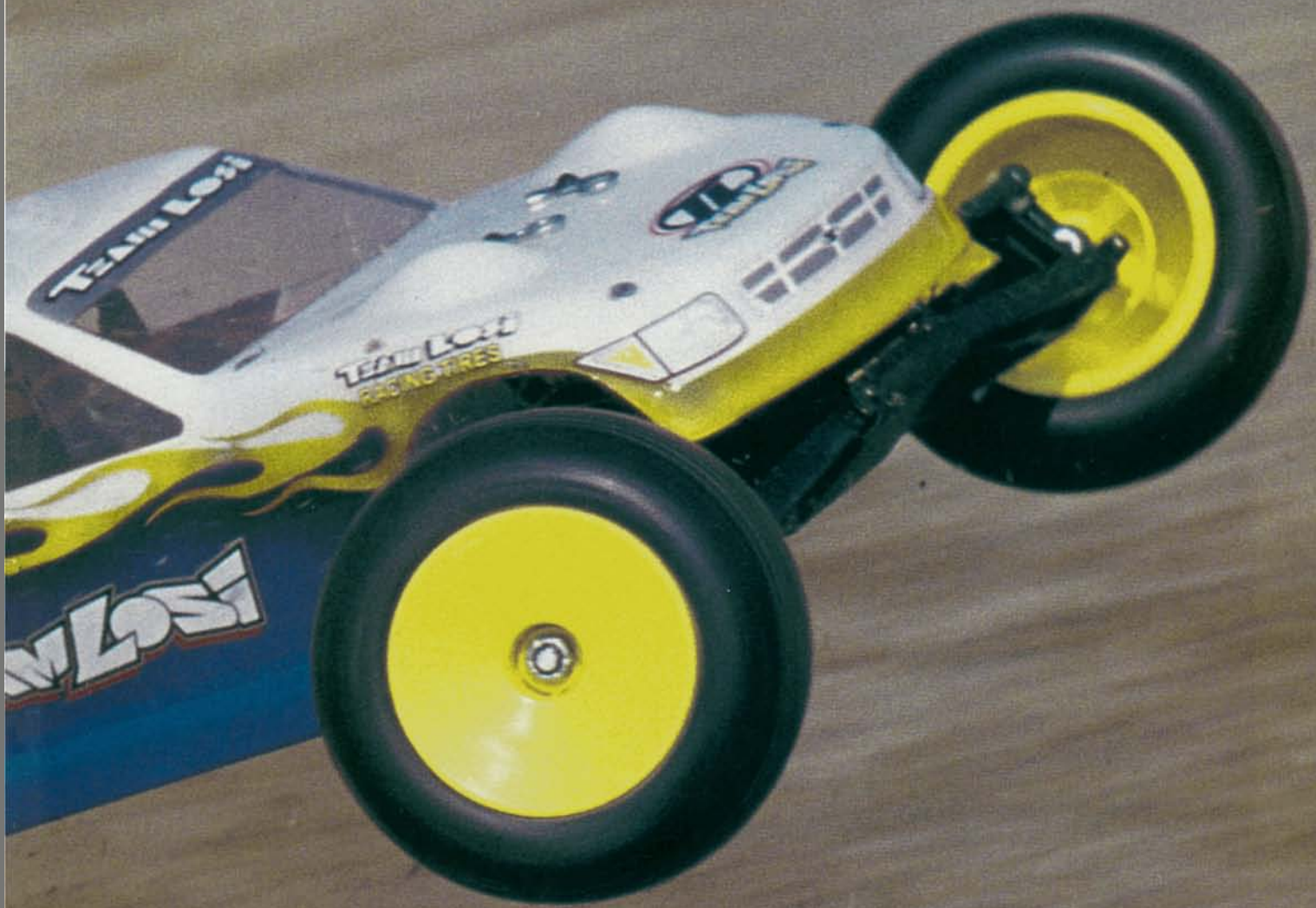
by Peter Vieira

If you're a Losi guy, you probably already have a Triple-X buggy, and as a reader of *Radio Control Car Action*, you saw the prototype of the Triple-XT truck (which shares all of the buggy's features) in the March issue. You know what the new truck looks like. You know which features it has. All that's left to do is drive it! We received a preproduction truck directly from Team Losi* for some wheel time. According to the gang at Losi, our truck is built with the suggested starting setup and represents what should be appearing on shelves by the time you read this. What could change between now and then? The suggested suspension settings could be altered, and there is still time for Losi to change the molds, if they feel any parts need extra beef. But in terms of features and overall performance, our test rig represents what you'll be racing this summer. Ready to check it out?

TEAM LOSI



Triple-



XT
XT

PHOTOS BY WALTER GIGAS AND PETER VIEIRA





ON THE TRACK

My first drive with the Triple-XT took place far from a racetrack; for the best light, staff photographer Walter Sidas and I took the truck to the beach. We like to get real wango-tango stuff for the action photography, with lots of tire-spinning, dirt-slinging and out-of-shape jump shots. We built the usual jumps to get the action, but the Triple-XT just wasn't doing what we needed



My pit stays this neat for about 10 minutes. After that, all bets are off.

it to do—it was too smooth! Instead of getting loose for the turn shots, it would just dig in and corner. Instead of skying off the jumps, it just sucked them up. We finally resorted to slamming the Triple-XT into what was essentially a wall of dirt, just to get some drama into the shots.

On the track, the truck showed similar poise. In my first heat on Big Boys Toys supertight clay track, the Triple-XT shined. The track required precise partial-throttle driving to get through the many hairpin and 90-degree turns, but a set of doubles and a fly-over "X" jump called for instant acceleration. To get around Big Boys' quickly, I needed to be able to set up for the jumps as early as possible, bury the trigger to clear the jumps then brake hard to steer into the next turn. The perfect truck for this track would have lots of steering yet be very forgiving—



This wide-angle shot makes the track look big, but it's way tight. Make a mistake, and you lose half a lap!

that's a tall order.

Some of the other drivers felt the truck had a little off-power push, but all felt the on-power handling was dead-on. Considering I didn't really have ideal tires for the track (the included 8-Rib tires packed up on the sticky clay), the truck was working even better than it felt, and it felt good. Jumping was never a problem, and the Triple-XT responded well to midair attitude corrections with throttle input, but it usually required no such attention once it left the track. Just wait for touchdown, then get back on the gas.

On a few occasions, I set up badly for the jumps and launched the truck into positions usually seen only in crash videos. I was already yelling "marshal" before the

WHAT THE RACERS ARE SAYING

I was lucky enough to squeeze the trigger on one of the very first just-about-production-ready Triple-XTs, but I wanted to give the truck a more thorough wringing out than I alone could deliver. To that end, I turned the gang at Big Boys Toys in beautiful Fall River, MA, loose on the newest Losi. Needless to say, everybody wanted to drive it! Here's what the locals had to say about the Triple-XT.



GREG CASTRO

It handles well; it handles like my Triple-X buggy. The Triple-XT handles better than my NXT gas truck. It's smooth; you can really power through the corners. It has plenty of steering under power. It jumps nice and level. Nice truck.



ED BRIGHTMAN

It handles well; it's smooth. It's even smoother and more stable than my Triple-X. It's easy to drive, it feels good over the jumps. I like it. I think it's the truck to get.

THE EYEBALL TEST

Check this out. I set up the Triple-XT and a Double-XT 'CR' on a table with the front arms and rear dogbones level, then had Walter click off identical views of each truck so you could compare them. I was surprised to see just how different the new truck is from the old; see for yourself.



Everybody notices how slammed the Triple-XT is, and now you can see why. It's no trick to make a low, sleek body, but check out the areas where the body passes over the shock towers; shock towers never lie. The Triple-XT is low and that definitely helps the truck to deliver the stuck-like-glue feel.

Right: the rear view isn't much of a shocker, but look closely: the Triple-XT's rear dogbone exits the tranny from a lower position than the CR's axle. It's a slight difference, but it can only add to the new truck's sure-footed feel.



Left: this front view reveals just how dramatically "dropped" the Triple-XT's front shocks are compared to the CR's front-mounted dampers. Note, too, the angles of the camber links; the Triple-XT has a higher inboard pivot, and its hub-carrier-mounted ball stud is much closer to the inside edge of the rim than the CR's combined kingpin/ballstud.



truck hit the ground, but I soon learned to keep my mouth shut; more often than not, the low-CG Triple-XT somehow held it together and landed on all fours instead of rolling onto its lid. I'm not saying you can't flip it, but the Triple XT will forgive some fairly bad driving.

THE VERDICT

For me, the Triple XT has the stability of a truck and the agility of a buggy. How's that for a combo? The new truck is easy to drive, and the stock setup seems able to cope with a variety of conditions. Obviously, you can tweak it out to be the ultimate blue-groove machine or rough-

track champion, but the box setup and the right tires should get most racers hooked up on most tracks. Add the features the Triple-XT shares with the buggy that spawned it (closer motor placement, angled steering bellcranks, simplified disassembly, lowered battery tray), and you have a truck that will be sure to please Losi-philosophers—and win a few converts, too, I suspect. It's going to be an interesting summer!

**Addresses are listed alphabetically in the Index of Manufacturers on page 216. ■*

INTERVIEW



Gil Losi Jr. on the Triple-XT

Radio Control Car Action: Since the JRX-T, Losi has been tweaking winning buggy designs into winning truck designs. Were there any unique challenges to developing a truck version of the Triple-X that did not arise during the creation of the JRX-T, LX-T and Double-XT?

Gil Losi Jr.: Not really. We planned for the truck from the beginning of the Triple-X project, so everything we wanted to incorporate in a truck was already designed into the Triple-X buggy. We knew we wanted to use the same basic rear end as the buggy had, but we did want to do a different front geometry package to compensate for the larger front tires, the body mass that sits on top of the front end and the overall higher center of gravity that trucks have. We pretty much penciled out the truck as we did the buggy.

RCCA: The Triple-X's 2.43:1 tranny was designed to do double duty in the Triple-XT. Were any other specific parts of the Triple-X's influenced by a need to serve in the Triple-XT?

GL: We knew we wanted to use a small, narrow front bulkhead. We designed that overkill front piece, with the sacrificial front bulkhead that could do all the flexing, with the truck in mind because the truck bulkheads get so tortured.

RCCA: Were there any innovations or technologies that you were unable to use in the Triple-X that might turn up in future "X" cars?

GL: Nothing that we can discuss now!



SCOTT FURTADO

I think it's great. It's a lot like the buggy. It's really stable. I have a Triple-X buggy, and the truck is much more stable. It stays lower over the jumps, and it's really good in the rough stuff. It definitely works great out of the box.



STEVE O'BRIAN

On a tight, tight track like this, you always need a little more steering, but outside, this truck will be awesome. I think it's gonna be the truck to beat.



BUD SMEDBERG

It's smooth; it's got just a little bit of push, so if you need a really easy-driving truck, that will help. I like a lot of steering, but I'm sure I could work with it. On an open, bigger track, it would probably be perfect.

FIRST DRIVE



KYOSHO SuperTen FW-04

The best gets better

by Steve Pond

When the SuperTen was first introduced, it was in a class by itself—literally! There were no other cars of its type on the RC market. Smaller nitro cars that resembled 1/10 electric touring cars were available, but this larger machine was a new breed of vehicle. Always a pioneer in the nitro arena, Kyosho* went ahead with this new class of car, and the rest is history.

Since the introduction of the SuperTen, similar releases have come from Tamiya (the TGX Mk. 1) and HPI (the Super Nitro RS4) to challenge the Kyosho. The staff of *RC Car Action* pitted the SuperTen against its competitors in a "Shootout" last year, and the SuperTen breezed through with top honors. You'd think that Kyosho would be content with the top-performing car in its class, but apparently, the company wants to further distance itself from the competition. The introduction of the new SuperTen FW-04 is proof positive that Kyosho doesn't want to share its performance honors with anyone else.

KIT FEATURES

• **CHASSIS.** The FW-04 includes a 3mm aluminum lower chassis plate. The thicker lower plate has countersunk screw holes that make the bottom of the car smooth and eliminate the asphalt-grinding button-head screws found on the old model. The engine-mounting

holes are also recessed into the chassis. The upper chassis plate is pretty similar to the previous design; the servos are in virtually the same position. The most significant feature of the new chassis is the integrated radio box. On the right side of the chassis, the long radio box is sandwiched between the upper and lower chassis plates. Its size and design allow the use of anything from a compact, 5-cell, rechargeable receiver pack to the space-hogging, 4-cell, AA alkaline holders. Even with the largest receiver battery packs, there is ample space for all but the largest receivers. The 4-channel KO Propo* receiver included with the EX-5 Master was a bit of a tight squeeze, but it did fit. The battery box is also easily accessible by removing a single clip and swinging open the full-length door.

On the other side of the chassis is a new, larger capacity, 100cc fuel tank. This is an increase of 25cc over the original kit's tank, and this makes it the largest tank of any that are included with the "Super" cars. Obviously, it will provide longer run times between



DATA CENTER

VEHICLE TYPE "Super" class, nitro-powered, 4WD, on-road car

BEST BUYER intermediate to advanced racers and non-racers alike who want a best-in-class performer

KIT RATINGS (poor, satisfactory, good, very good, excellent)

Instructions good

Parts fit/finish very good

Durability insufficient testing, but historically good

Overall performance excellent

SPECIFICATIONS

SCALE "Super"

LIST PRICE \$499.99

DIMENSIONS

Wheelbase 11.02 in. (280mm)

Width 8.66 in. (220mm)

WEIGHT

Total, as tested 75.68 oz. (2,145.53g)

CHASSIS

Type Double-deck

Material Aluminum

DRIVE TRAIN

Type Shaft-drive 4WD

Primary Clutch bell/spur gear

Drive shafts Dogbones

Differential(s) 4-gear bevel (sealed)

Final drive ratio 8.745:1

Slipper None

Bearings/bushings Bearings

SUSPENSION

Type Double A-arm

Damping Molded oil-filled shocks

WHEELS

Type One-piece plastic

TIRES

Type Kyosho K-Zero slicks

ENGINE AND ACCESSORIES

Engine Kyosho GS-15R

Carb Composite rotary

Starter Pull-starter

Pipe Cast-aluminum tuned

Manifold Aluminum slot-port

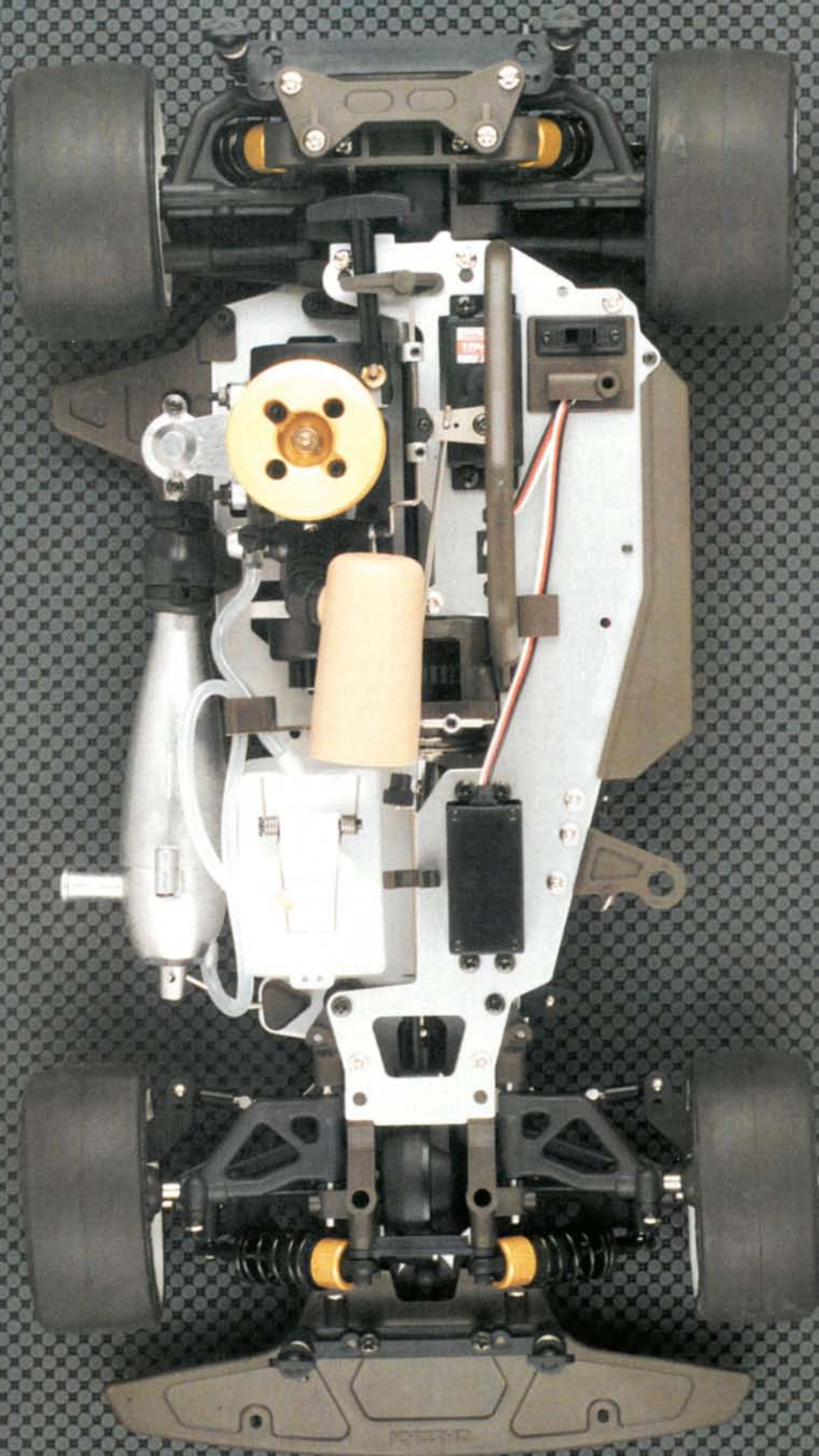
Fuel Trinity Monster Horsepower 20% (not included)

ELECTRONICS (not included)

Transmitter KO Propo EX-5 Master AM

Servos (2) KO Propo PS401

Receiver pack Orion 5-cell 1000mAh



photos by walter sidas



building & setup tips

The target buyer for the FW-04 is someone who has intermediate to advanced building skills and some basic knowledge of nitro engines. That doesn't mean that a novice can't successfully build this car; just that it takes more care and patience than an entry-level kit.

There weren't any notable challenges in the building process. Though they lack a great deal of written guidance, the instructions do a good job of pointing out areas that need thread-lock, glue and grease. No special tools are required for assembly, either; the kit includes all necessary Allen and box wrenches. The only additional tool I used was a 4mm reamer. There is very slight binding on a couple of the suspension arms, and the reamer properly sized the hinge-pin holes for very smooth suspension movement. A couple of weeks of running the car would accomplish the same goal, but picky me wanted it to be perfect the first time it hit the ground.

The following tips address specific sections of the instruction manual.

Step 4. During assembly of the gear diffs, it's wise to pack the diff housing with grease or heavy silicone oil to limit differential action. It's not something you have to do to make the car work properly or increase durability, but it does improve handling. By limiting differential action, the unloaded wheel or wheels are less likely to freewheel. I used 7,000WT Kyosho diff lube, and it appears to offer a good balance without excessively limiting cornering ability.

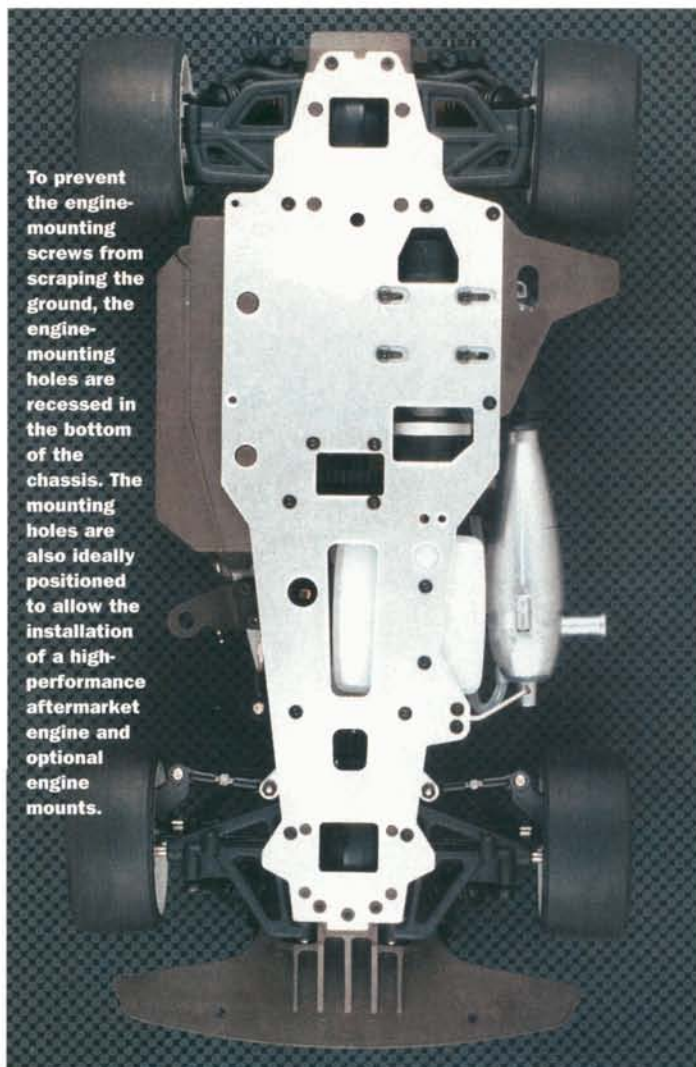
Steps 6 and 14. When threading the pivot-ball nut into the hubs of the front and rear suspensions, tighten them until the pivot ball binds. Then slowly loosen the nut until the pivot ball is able to drop under its own weight. This area will wear somewhat over time, especially when the car is new, so pay close attention during the first few weeks of running, and tighten the pivot-ball nut as necessary.

Steps 7 and 15. This is where I used the 4mm reamer to free up the suspension. A nice new feature of the FW-04 is its large, 4mm hinge pins. Only two E-clips are used in all of the suspension, and this means that most of the hinge pins are captured in the bulkheads. This is a great feature, but it eliminates movement of the hinge pins in this area. That means all of the suspension arms must pivot freely in the hinge pins. If you wish, use a 4mm reamer on each of the suspension arms until they can pivot freely.

Step 20. The FW-04 kit includes green shock oil of an unspecified viscosity. If you intend to race the car, it's best to know exactly what you're putting into the shocks so when a change is required, you'll know where you started and whether to increase or decrease the shock oil's viscosity. I used 55WT oil, and it appears to be a good starting point for smooth to mildly bumpy surfaces.

Step 25. Don't skim the instructions the way I did and install the left-side nerf wing; you'll only have to remove it eight steps later when the upper plate and radio box are installed.

Step 45. Set aside an entire day to complete the painting and place the decals. The Supra is one of the most decal-intensive bodies I've ever seen. It takes as much time to do a respectable decaling job as it does to build the car.



To prevent the engine-mounting screws from scraping the ground, the engine-mounting holes are recessed in the bottom of the chassis. The mounting holes are also ideally positioned to allow the installation of a high-performance aftermarket engine and optional engine mounts.

LIKES

- Versatile suspension design allows changes to geometry without changing parts.
- Lower chassis plate uses flat-head screws for a flush, smooth bottom surface.
- Large-capacity 100cc fuel tank doesn't have a primer pump, thereby eliminating a common source of air leaks.
- Radio box protects radio gear from the elements and is easy to access.
- Improved cylinder head, 2-needle composite carb and cast tuned pipe produce a measurable increase in performance.

DISLIKES

- Has only three linkage rods, and they are threaded rods instead of turnbuckles.
- The fuel tank doesn't have a built-in fuel filter, and although a mount is included, a canister filter is not.
- Brown plastic. I know it doesn't affect the car in any way, but I would have chosen all black.

FACTORY OPTIONS

- Stabilizer set (F/R)—part nos. FZW54/FZW55.
- Touring oil dampers (SS)—W5151.
- Teflon touring oil dampers (SS)—W5152.
- Aluminum countersunk chassis—FZW51.
- Carbon upper deck—FZW52.
- Carbon steering plate—FZW22.
- Foam bumper—39401.
- Aluminum antenna holder—1710.
- Special universal swingshaft—FZW53.
- Steel diff bevel gears—FZW13.
- Steel diff pinion gears—FZW15.
- Steel diff gear set—FZW18.
- Aluminum hard diff case—FZW25.
- Viscous coupling—FZW26.

- Ball-diff set—39507.
- Vespel clutch shoes—39672.
- 2-speed transmission set—FZW56.
- Cooling-fan set—39641.
- Fuel filter—39308.
- Aluminum engine mounts—39648.
- Tuned-exhaust system—39517.
- Super tuned silencer—39661.
- Super silencer set—39712.
- Exhaust manifold—39417.
- 4-stroke fitting kit—FZW30.
- Special 4-stroke muffler—FZW40.
- Standard 4-stroke muffler—39711.

YOU'LL NEED

- 2-channel radio system w/two servos.
- Receiver pack.
- Fuel (approximately 20% nitro).
- Fuel bottle (highly recommended).
- Glow igniter.
- Polycarbonate-compatible paint.
- CA glue.
- Thread-locking compound.



Left: the new "muffler," as Kyosho calls it, is more like a tuned pipe. It's rather unconventional, but it provides much better performance than the actual mufflers used on previous models. Below left: the suspension features longer arms for improved stability and better handling on bumpy tracks. To better support the larger wheels used on Super-class cars, the hex hubs have been enlarged to 14mm. Note the new adjustable servo-saver; it can accommodate just about any type of servo. Below right: for the ultimate in adjustability, the new rear suspension features three pivot balls. The third pivot ball is attached to a separate link and allows rear toe-angle adjustments without disturbing the caster setting.



fuel stops, but it may also cause some ripples on the racing scene. A larger tank can be an advantage that draws protests from those who run vehicles with smaller tanks. HPI and older Kyosho cars used 75cc tanks, while Tamiya bucked the trend with an 85cc tank. Now, all three major manufacturers in the "Super" class serve up their offerings with different-size tanks. It should be interesting at the track, to say the least.

• **SUSPENSION/STEERING.** Most of the FW-04's technological advances have been made in the suspension department. For starters, all of the suspension arms are 5mm longer at all corners. This makes the FW-04 more stable over the bigger bumps and through the corners. To accommodate the longer arms, both the front and rear bulkheads have been narrowed accordingly, thereby keeping the overall width 220mm. The steering blocks pivot on adjustable, 11mm pivot balls. This makes it really easy to adjust tolerances when the parts begin to wear, and it makes it easy to quickly adjust width, rear toe and camber. Caster is more easily adjusted as well, using C-clips to position the upper arm on the hinge pin. Two, 1.9mm clips are used to position the upper arms fore and aft and, depending on their positioning, caster angle can be set to 7.5, 11, or 14.5 degrees.

Just behind the front-end assembly is the new steering setup. The previous SuperTen generation came with either a weak, bellcrank-mounted servo-saver or one that was equally inadequate mounted directly on the servo. The new FW-04 features a spring-loaded, adjustable servo-saver built into the bellcranks. It can be adjusted for use with an entire range of servos.

The rear suspension also got a makeover and now has a much more functional, competition-oriented

design. The new rear hub carriers are supported by three pivot balls attached to three suspension arms. The FW-04 includes the conventional upper and lower A-arms, but there is also a third "arm," or link, that holds the third pivot ball. More conventional designs have two pivot balls attached to the lower arm and a single ball to the upper arm. When toe-angle adjustments are made to the conventional design, it will require readjusting the camber setting. The unique design of the FW-04 is such that a toe-angle adjustment will not disturb camber angle. Of course, a camber adjustment will throw off the toe setting, but it's my experience that toe adjustments are more frequently made than camber.

All corners of the FW-04 are damped with molded, oil-filled shocks. The kit comes with shock oil of unspecified viscosity, so I used 55WT Trinity shock oil.

• **DRIVE TRAIN.** The FW-04 features a shaft-drive 4WD system with a sealed 4-gear diff at each end—identical to the previous SuperTen. Power is transferred through the centrally mounted, molded spur gear to half shafts that are connected to the differentials. Mounted just in front of the center bulkhead that houses the spur gear is a stainless-steel disc brake. This is a carryover from the previous model and has proven very effective at stopping these nearly 5-pound cars.

Dogbone drive shafts drive the wheels, and another new feature connects the dogbones to the wheels: the axles and bearings that support them. Axle diameter has been increased from 5 to 6mm, and the bearings have been changed from a pair of 5x10mm for each axle to a single 6x12mm and 12x18mm for each. The stronger axles supported by the much larger bearings eliminate much of the play found in the old design. The new setup is much more resistant to cornering forces, and this helps keep the tires flat on the ground.

KO Propo EX-5 Master radio

Although the FW-04 is likely the most sophisticated base level kit in its field, it's still the entry point for the Kyosho "Super" lineup. I opted for KO's mid-level model in the EX-5. This AM system offers all the features desirable for running a gas car yet keeps costs to a minimum.

I equipped the car with the standard KO PS401 servos that came with the radio. To increase the servo speed to the level I'm accustomed to, however, I opted for a 5-cell, rechargeable receiver pack. The servos did a very good job of centering and swinging the wheels around under heavy use.

Trinity Monster Horsepower fuel

I chose this fuel partly because I've had good experiences with it in very high-performance applications and partly because the lubricant content is disclosed on the bottle. More and more, consumers are demanding lubricant-content information, and Trinity⁺ is one of the few brands that discloses it.

Lunsford titanium turnbuckles

When I got to the point of assembling the steering tie rods, I was disappointed to discover the FW-04 isn't equipped with turnbuckle linkage. Only two turnbuckles are required (three, if you count the steering rod that connects the servo to the bellcrank). Since I have no desire to remove and reinstall the steering linkage every time adjustments are required, I simply opted to use a few Lunsford⁺ linkage rods to make my life a little easier.

Sonic Tronics glow igniter

Nothing seems to make your life easier than a good glow igniter. Sonic Tronics⁺ (formerly McDaniel R/C) glow igniters have always served me well, and I'll stick with them.

One change to the drive train is either a benefit or a drawback, depending on your perspective: the 14mm hex hubs that are 2mm larger than those previously used. The larger hubs support the wheels better—certainly an improvement—but it renders obsolete the wheels acquired by owners of the older model.

• **WHEELS AND TIRES.** Obviously, the larger hex hubs require new wheels, and Kyosho delivers a nice set of 6-spoke hoops with the FW-04. More important is the inclusion of Kyosho K-Zero slicks as standard equipment. These used to be optional for racers who wanted more than the stock treaded tires on the older models could offer. Beneath the gummy slicks are soft foam inserts that help support the tires under cornering loads.

• **BODY AND WING.** This is the good news part for owners of the previous SuperTen model. The FW-04 uses many of the same bodies, so there is a sizable crop from which to choose. My kit came equipped with the Toyota Castrol Tom's Supra racing body. The scale appearance is among the very best, and the larger size makes it easier to paint. Precut window masks speed the prep time, and a detailed decal sheet adds much of the finishing detail. Just be prepared to spend a long time applying decals to the Supra body. It took me longer to duplicate the body shown on the box than it did to build the entire chassis!



• **ENGINE AND ACCESSORIES.** A "new" engine makes its debut in the FW-04: the GS15-R. The 15-R is the next-generation GT15—the engine included with the older cars. The 15-R features a new cylinder head for improved cooling and a composite carb. A carb constructed of composite material is less prone to heat transfer from the engine, and therefore, it's less likely to suffer from vapor lock and other ills caused by an overheated carburetor. This carburetor also retains a 2-needle configuration—an important asset when it comes to engine tuning. Although the FW-04 retains the "ET"-like air filter, now in 1960s cash-register brown, it does include a new exhaust system that increases performance. The cast-aluminum "muffler," as Kyosho calls it, is more a tuned pipe than a muffler. Its five-part design includes an admittedly odd-looking two-piece header. The pipe includes a divergent cone, a separate convergent cone and last, the tip of the pipe, which forms a second chamber and the exhaust outlet. In practice, it's more like a two-chamber tuned pipe than it is a true muffler.

PERFORMANCE

My test of the FW-04 was limited, in a sense, because it didn't take place during the active racing season. Still, I have a lot of experience with the major players in the class, and I think this provides a strong basis for comparison. Here's what I discovered:

• **Starting.** The FW-04 fires up quite easily, largely because of the factory mixture settings of the carburetor. Some fine adjustments were required for peak performance after break-in, but the standard settings should be sufficient to get the engine fired under most conditions. Although the supplemental engine break-in and tuning instructions tell you to reach for a primer pump on the fuel tank, there isn't one. The absence of a primer pump is, in the long term, beneficial because it prevents the almost-guaranteed air leak that results from its use. Getting fuel to the carb for start-up, however, requires a different but equally simple procedure: pinch the rubber exhaust tip and pull once on the starter cord; this will quickly pump fuel right up to the carb. Don't overdo it, or the engine will flood. After ensuring that the fuel is being fed through the fuel line, simply attach the glow igniter and fire it up. It

shouldn't have to be said, but I'll say it anyway: don't touch the exhaust when it's hot! No priming should be necessary after the engine has been started; most likely, there's already fuel in the fuel line and the carburetor. If priming is necessary when the engine and exhaust are hot, simply use a rag to insulate your fingers before you pinch the exhaust tip.

• **Acceleration.** Best in class ... period. A properly adjusted 2-needle carb, aggressive 8.745:1 final drive ratio and the most performance-oriented exhaust system ever to see the inside of a standard Kyosho kit add up to very crisp acceleration. In fact, the FW-04 easily outclasses its predecessor, which was previously the acceleration champion of its class. Stabbing the throttle results in a response that's simply unexpected from a standard engine in this class.

• **Handling.** In my experience, the SuperTen has the most aggressive handling of any other "Super" car. Steering response is very quick, and this makes it easy to negotiate tight turns. The recommended caster setting of 11 degrees provides a good balance of high-speed stability and cornering prowess. The rear toe-angle adjustment is a new feature of the FW-04 that adds an extra dimension to its tuning. I started with about 2 degrees of toe per side, and this settled the car really well in low-bite situations. As soon as you've laid down the sugar water (or whichever traction aid your track uses), you can back the toe angle out to 0.5 or 1 degree.

• **Braking.** The FW-04's stainless-steel brake is among the best in the business. The steel rotor tends to be more uniform in its thickness; this makes the brakes less likely to pulse when they stop. When you try to slow a nearly 5-pound car from race speeds, however, using a single disc can cause a little brake fade. I found it's best to set the brakes a little on the tight side to allow for ample braking power when temperatures rise in the middle of a heat. I thought about adding another disc, but there isn't any room. Maybe an aluminum disc for better heat dissipation

FINAL THOUGHTS

If you aim to compete, the FW-04 should be at the top of your wish list. Its predecessor was already at the top of its class, and this new car is another cut above. The extra level of sophistication in the new design aims this kit more toward the experienced hobbyist/driver, but it's certainly not beyond the reach of novices who have an experienced hobbyist looking over their shoulder. The street price is expected to be about \$300, making it the most expensive in its class—but only by 20 bucks or so; certainly not enough to overlook the performance advantages this car will offer to the racer.

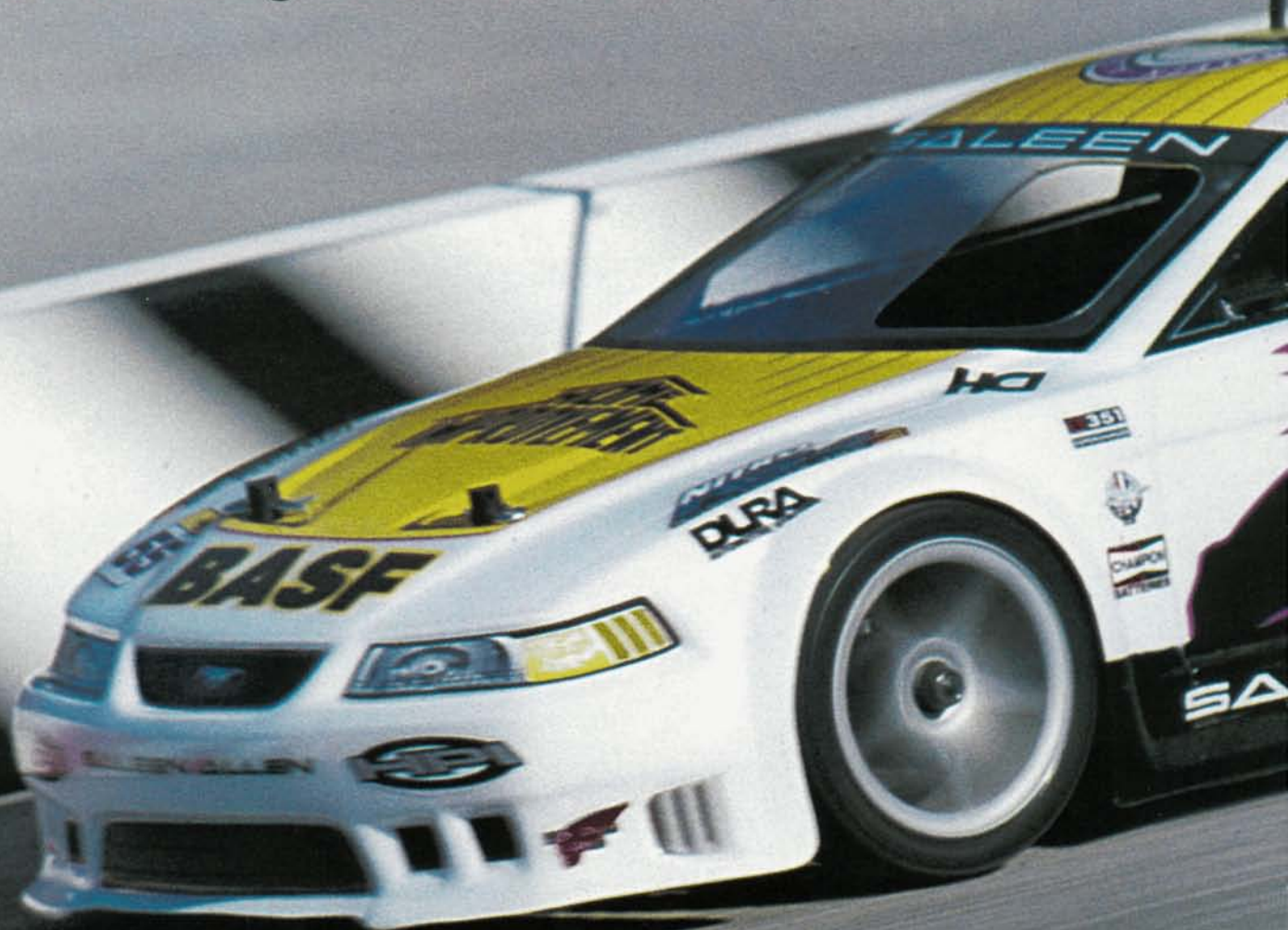
It's still not the "perfect" car, but any remaining issues are more nitpicking than substantive: there aren't any turnbuckles, and the countersunk holes on the bottom of the chassis are just shy of being deep enough. That's about all I can come up with. The flip side is that the FW-04 offers a level of sophistication never before seen in a Super-class car at a fairly reasonable price. Even this base model is capable of competing at high levels of racing, not to mention the inevitable—but more costly—SuperTen Comp IV.

Bottom line? I think the FW-04 offers the best value in its class for the performance enthusiast. Its new design will require more patience and tuning know-how than other cars, but that's precisely what is going to make the FW-04 such a formidable competitor.

*Addresses are listed alphabetically in the Index of Manufacturers on page 216. ■

HPI Nitro RS4 2

Pro 2 handling comes to nitro by George M. Gonzalez





The popularity of nitro-touring car racing has grown immensely, and much of this can be attributed to one vehicle: the HPI* Nitro RS4. Thanks to its easy building, competent handling and ready parts availability, the Nitro RS4 quickly became a favorite of racers and enthusiasts alike.

Given its popularity, it made sense when HPI chose to make the Nitro RS4 its first "ready-to-run" offering. However, there was much more to the new RTR machine than an included radio: it has many new parts as well—parts that would be shared with the then-unknown Nitro RS4 2, which is reviewed here. The next-generation Nitro RS4 is more than a kit version of the RTR; it includes its own exclusive features. What are they and how do they work? Keep reading.

DATA CENTER

VEHICLE TYPE 4WD nitro-powered touring car.

BEST BUYER racers and enthusiasts looking to get started in nitro racing.

KIT RATINGS (poor, satisfactory, good, very good, excellent)

Instructions very good

Parts fit/finish very good

Durability excellent

Overall performance very good

SPECIFICATIONS

SCALE 1/10

LIST PRICE \$439

DIMENSIONS

Wheelbase 10.5 in. (267mm)

Width 7.75 in. (195mm)

WEIGHT

As tested 58 oz. (1,588g)

CHASSIS

Type Double deck

Material 2.5mm aluminum lower deck/molded upper

DRIVE TRAIN

Type Triple-belt 4WD

Primary Clutch bell/spur gear

Drive shafts (F/R) Dogbones

Differential(s) Bevel-gear

diff pulleys

Bearings/bushings Bearings

SUSPENSION

Type Lower suspension arm, upper control link

Damping Plastic-body, oil-filled, coil-over shocks

WHEELS

Type One-piece plastic mesh

Dimensions (DxW) 2x1 in.

TIRES

Type HPI super radials (Pro compound)

ELECTRICS (not included)

Transmitter JR Racing XR2 2-channel AM

Receiver JR Racing R122 75MHz AM

Steering servo JR Racing Z250

Throttle servo JR Racing Z250

ENGINE

Type HPI Nitro Star 15FE

Carburetor Single-needle rotary (4.5mm Venturi)

Starter Pull-starter

Pipe HPI tuned manifold and muffler

Fuel (not included) Trinity* Monster Horsepower (20% nitro)

LIKES

- Easy to build and maintain.
- Great handling; can be raced right out of the box.
- Tons of hop-ups available.
- Awesome-looking Saleen Mustang body.
- Replacement parts are readily available.

DISLIKES

- Carb tends to load up.
- Kit should include more spring-preload spacers and shock pistons to broaden tuning options.



The new upper deck has a user-friendly receiver battery-pack holder and a separate platform that allows the receiver to be mounted low on the chassis. The upper deck can be completely removed in minutes to strip the car down to a rolling chassis.

YOU'LL NEED ■ 2-channel radio system with 2 servos ■ 4 AA batteries for the radio system. ■ Fuel ■ Fuel bottle (highly recommended) ■ Glow-plug Igniter ■ Paint for the Lexan body ■ CA glue for the tires

FACTORY OPTIONS ■ 2-speed tranny—part no. A910 ■ Universal drive shafts (F/R)—A510/A511 ■ Lightweight flywheel (for pull-start engine)—A925 ■ Fiber brake disc—A844 ■ Super Chassis—A903 ■ Graphite parts; Upper deck—A930, Shock towers (F/R)—A570/A218, Rear brace—A935

building & setup tips

The Nitro RS4 2's instruction manual has been refined. Build it exactly as instructed, and you'll have a dialed-in ride. Here are a few additional tips that will make operating your vehicle more rewarding.

Liquid thread-lock. Use this stuff on all of the fasteners that are threaded into a metal part. Finding a screw that has vibrated loose and fallen is about as hard as finding a needle in a haystack.

In addition to cutting an opening on the windshield and driver's-side window to allow air to circulate, make an opening in the rear window behind the engine to allow air to exit.

Pick up a rechargeable onboard Ni-Cd receiver pack. In the long run, it will save you money because you won't have to buy alkaline batteries repeatedly. Ni-Cds also have a more even discharge curve; unlike alkaline batteries, they don't dump all at once, so it's easier to detect when they are going south.

After every session of running, remove the glow plug, put a couple of drops of after-run oil into the glow-plug opening, and turn the engine over a few times to circulate the oil. Then drain the fuel tank and fuel line completely, and leave the fuel line disconnected from the carburetor. Prop open the fuel tank's flip-top lid with the end of the fuel line that usually goes to the carburetor, and leave it like that until the moisture in the tank has evaporated.

Use a new paintbrush to brush dust and road grime off the chassis; remove the tires and other parts so that you'll also be able to brush dust out of all the nooks and crannies. Proper maintenance will ensure that your vehicle will always be in tiptop shape.

Always run the vehicle with a clean, freshly lubed air filter. When the foam air filter is dirty—or after every running session—remove the filter and clean it with motor spray or warm soapy water. When it has dried, apply a few drops of air-filter oil or after-run oil and work it in with your fingers. Before you install the fresh air filter, clean its housing, too.

COMPETITION

	SCHUMACHER NITRO SST	TAMIYA TG10	HPI NITRO RS4 2	OFNA Z10 PRO NITRO
Wheelbase	10.0 in.	10.2 in.	10.25 in.	10.3 in.
Width (F/R)	7.28 in.	7.64 in./7.5 in.	7.5 in./7.75 in.	7.5 in.
Weight	52.5 oz.	54.1 oz.	51 oz.	55.8 oz.
Diff type	Ball	Bevel gear	Bevel gear	Ball
Chassis (lower/upper)	Fiberglass	Aluminum/plastic	Aluminum/plastic	Aluminum/graphite
Engine	Thunder Tiger .12	Tamiya FS-12LT	Nitro Star .12 FE	Force .12
Header/pipe	Header/tuned pipe	Muffler	Tuned exhaust system	Header/muffler
2-speed	No	No	No	Yes
List price	\$590	\$341	\$329	\$499
Street price	\$345	\$229	\$217	\$309
Reviewed in	9/99	2/99	8/98	8/98

The chart does not include all the vehicles available in this class.



The HPI Nitro Star 15FE is a solid little engine that provides surprisingly good performance, even with the smallish muffler. I installed HPI's optional heat-sink head and twin-needle carb to exploit the engine's full potential. I also installed GS Racing's silicone fuel line and exhaust coupler and a Du-Bro[®] in-line fuel filter.

FEATURES

CHASSIS. The Nitro 2's 2.5mm-thick purple-anodized aluminum chassis' raised sides increase rigidity, and the countersunk screw holes ensure that the screw heads don't scrape the asphalt. The engine has built-in mounts, and the gear mesh is preset to simplify installation. You could change spurs and clutch bells, but to do this, you'll have to install different engine mounts and use the corresponding mounting holes on the chassis, and they aren't countersunk. HPI's 2-speed is a good choice because it provides good acceleration and top speed and can be installed without your having to buy new engine mounts.

The new upper deck looks nicer and is lighter than the previous molded upper deck. A platform allows you to mount the receiver lower on the chassis, and a versatile receiver-battery-pack mount accepts 4- and 5-cell Ni-Cd packs and 4-cell alkaline battery holders. You'll find the Nitro RS4's trademark carrying handle, but it now includes a molded-in wire harness to help you organize and secure the servo and battery leads.

DRIVE TRAIN. HPI's proven, triple-belt drive train has been carried over to the Nitro 2. I'm glad because the drive train is smooth, efficient and easy to service. Additionally, I'm so familiar with the Nitro RS4 platform that I can disassemble and reassemble it without referring to the instructions. Every spinning part has a complete set of high-quality bearings, and to cut down on maintenance, they're rubber-sealed (with the exception of the outdrive bearings).

The front and rear bevel-gear diff pulleys are easy to build and can be tuned by varying the type and quantity of grease you put into the diff housings. Steel dogbones transfer the power to all four wheels and a conventional disc-brake system slows the Nitro 2 down.

SUSPENSION. The Nitro 2 features the same caster and steering blocks as HPI's Pro 2 electric sedan, and the kit comes with 8-degree and 10-degree caster blocks to tune steering response. The suspension arms are a wide version—200mm—of the Pro 2 arms, and for more consistent handling, all of the inner and outer pivot points are on the same plane. The Nitro 2 is slightly wider than the first-

generation Nitro RS4, and the extra width increases high-speed stability. Additionally, many of the suspension components are molded of a new, more rigid, fiber-reinforced plastic to reduce flexing during high-speed cornering.

Of the kits I've built, the Nitro 2 is the first to include both fixed-length, molded camber and steering links and adjustable tie rods and ball cups. First-time racers who don't have camber gauges or another way to measure toe-in/out angles accurately should install the fixed-length camber and steering links to ensure correct wheel alignment. More seasoned racers will probably opt for the tie rods.

The Nitro 2 includes the same plastic-body, oil-filled, coil-over shocks as its predecessor, and stiff progressive springs complete the damping package. The shocks are easy to build, smooth and don't leak, but I was disappointed to find that the kit



Longer suspension arms provide greater stability. The plastic-body shocks work very well, but the kit does not include additional shock pistons. Strong steel dogbones transfer the power to the ground.

includes only one shock piston and only one, medium-thick preload spacer for each shock. There is, however, a new, easier-to-build bellcrank steering system that places the servo-saver on the servo horn instead of on one of the bellcranks.

ENGINE AND ACCESSORIES. The included Nitro Star 15FE engine is reliable and easy to tune—great traits for first-time nitro racers. It also has the necessary power to get the Nitro 2 up to some exciting speeds without turning the run into a white-



Left: the Nitro RS4 2 features the same high-performance suspension geometry as the electric RS4 Pro 2. The kit includes both fixed-length molded camber and steering links and adjustable tie rods; the choice is yours. The kit also includes 8- and 10-degree caster blocks to adjust front caster. **Right:** this spring-loaded servo horn replaces the old "L" horn. The built-in metal tension band eliminates the take-up springs used by the other Nitro RS4 series cars (and just about every other manufacturer's nitro car).

JR Racing XR2 AM transmitter, receiver and servos

Just about any 2-channel AM radio will control the Nitro 2, but a more racing-oriented transmitter will allow you to exploit its full potential. The JR Racing[®] XR2 is an affordable, computer-controlled AM transmitter with 2-model memory and all the racing features that are necessary for competition. Steering and throttle dual rate and sub-trim adjustments and individual left and right/forward and reverse endpoint adjustments are only a few of its hot features. The included Z250 standard race servos and R122 2-channel 75MHz receiver worked flawlessly and kept the Nitro 2 under control at all times.

Trinity Monster Horsepower Fuel

I've been using this for several months and it's good stuff! I use the 20-percent-nitro, and the Nitro 2 ran reliably from the first tank. I like being able to buy the fuel in quarts because that's the perfect quantity for racing. I pick up a quart whenever I race, and that ensures my vehicles always get fresh fuel.

GS Racing fuel line and exhaust coupler

I replaced the thin silicone fuel line that came with the kit with larger-diameter silicone fuel tubing from GS Racing[®]. I coiled the extra fuel line around the fuel tank (this old-illegal-NASCAR trick allows the car to carry more fuel). I also replaced the stock exhaust coupler (which had come apart a couple of times during my tests) with a GS Racing silicone exhaust coupler that grips the manifold and muffler more securely.

FMA Direct Ni-Cd receiver pack

I went for the convenience of Ni-Cds. I prefer to use 5-cell Ni-Cd packs because they provide more power and run time, but I didn't feel like pirating a 5-cell pack from one of my other vehicles, so I installed a 4-cell FMA[®] pack that was readily available. The pack provided nearly an hour of run time, and the servos had surprisingly good speed and torque.

HPI Nitro Star heat-sink head and SS carb

As I mention in the performance evaluation, I installed an HPI 15FE heat-sink head (part no. 1703) and the optional twin-needle carburetor (no. 1634). In my opinion, in addition to suitable tires, these are the only two items needed to make the Nitro 2 truly race-ready.

Du-Bro in-line fuel filter

This rebuildable Du-Bro[®] unit features a threaded, two-piece, machined-aluminum housing, a fine element screen and a rubber O-ring seal.

knuckle experience. The engine features: a strong steel connecting rod; dual crankcase bearings; an easy-to-adjust, single-needle rotary carb with a larger 4.5mm Venturi; and a rugged pull-start mechanism.

The new tuned muffler and manifold system works very well and it sounds and works like a tuned pipe. The exhaust system allows the engine to breathe more efficiently than most model airplane-type canister mufflers and the muffler's flat sides allow it to be tucked in nicely beneath the included Mustang Saleen body. A 75cc fuel tank with a flip-top lid for quick fueling and a handy, manually operated primer that feeds fuel to the carb for easy starting are included. You'll also find a simplified throttle-and-brake linkage system with a two-piece servo horn that's equipped with a metal tension band that eliminates the need for take-up springs.

WHEELS, TIRES AND MORE. the Nitro 2 comes with a complete set of gray mesh wheels and Pro-compound super radial tires with foam inserts. The tires work great on dusty, unprepared surfaces and are suitable for parking-lot racing. The Nitro 2 I was sent for this "Track Test" included HPI's hot-looking new Saleen Mustang body in Saleen/Allen Racing "Home Improvement" livery. This officially licensed body includes an elaborate decal sheet, window masks and two rear wings. The Nitro 2 will surely be available with many other body choices in the near future, but you have to admit that our shots of the "Stang" in action are mighty awesome!

PERFORMANCE

I reviewed the Nitro RS4 RTR in the April '99 issue and have been racing it ever since. Because the Nitro RS4 RTR and Nitro RS4 2 are essentially the same, I had some idea what to expect from the RS4 2.

I followed the break-in instructions to the letter, and by the seventh tank of fuel, the Nitro 2 really started to show its colors. I was impressed with its top speed and handling. The gearing seemed perfect for a tight track because the Nitro 2 spooled up and

reached its top speed in about 75 feet. Though I ran it in front of my house on a dusty street corner, it was very sure-footed. On high-traction surfaces, the tires squealed when cornering at high speeds, and this shows that they're perfect for racing on unprepared parking-lot tracks.

I did notice that the carburetor tended to load up whenever I let off the throttle and then quickly got back on the gas and when the car was left idling for more than a second or two. This is typical of most single-needle carburetors because the low-end fuel/air mixture is set at the factory, and there's no way to adjust it. I also noticed that the engine ran hot when adjusted for maximum performance (approximately 320 degrees Fahrenheit, according to my Raytek temperature probe).

I went back to my workbench and installed HPI's optional heat-sink head and the carb from an HPI Nitro Star SS engine (borrowed from another of my nitro vehicles). After a few adjustments, my Nitro 2 was going from point "A" to point "B" in a big hurry. It accelerated from a dead stop without hesitating, and it was much faster on the top end, too. The engine's temperature dropped to 290 degrees F, which is a much more acceptable running temperature.

THE VERDICT

This second-generation Nitro RS4 2 is easier to build and maintain, it's faster, and it handles better than its predecessor. Though it shows many improvements, most of the RS4's great features are still there, and that means that most of the factory and aftermarket hop-ups for the RS4 may be used on the Nitro 2.

If you're thinking about getting started in nitro-powered touring-car racing or are thinking about replacing your worn-out racecar with a fresh new platform, the HPI Nitro RS4 2 should be at the top of your test-drive list.

*Addresses are listed alphabetically in the Index of Manufacturers on page 216. ■

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Team Losi Double-X4 Worlds Edition

**The Worlds' best
4WD buggy** by Kevin Hetmanski



Team Losi rocked the 4WD world when it introduced the Double-X4 back in the summer of 1997. The car's unique design and great handling brought life back to the 4WD class.

This car has gone on to win many national and local championships. Most notably, Jukka Steenari piloted a Double-X4 to win the 1999 IFMAR Worlds in Rauma, Finland. Team Losi gathered all the parts of the Worlds-winning car and packaged them so you can have the same decked-out ride as Jukka drove to win the Worlds for much less coin than a stock Double-X4 (hop-ups are bought separately). How different is the Worlds car from the standard Double-X4? I'll give you the lowdown.



PHOTOS BY WALTER SIDAS



DATA CENTER

VEHICLE TYPE 1/10-scale, electric, 4WD off-road buggy.

BEST BUYER person looking to do some serious 4WD off-road racing.

KIT RATINGS (poor, satisfactory, good, very good, excellent)

Instructions: good

Parts fit/finish: good

Durability: good

Overall performance: excellent

SPECIFICATIONS

SCALE 1/10

LIST PRICE \$299.99

DIMENSIONS

Wheelbase 10.7 in. (272mm)

Width (F/R) 9.5/9.7 in.
(242/246mm)

WEIGHT

Total, as tested 57 oz. (1,619g)

CHASSIS

Type Molded tub

Material Graphite composite

DRIVE TRAIN

Type Sealed triple-belt drive

Primary Pinion/spur

Drive shafts Universal

Differential(s) Ball

Slipper clutch Double disc

Bearings/bushings Bearings

SUSPENSION

Type Lower arm w/adjustable upper link

Damping (F/R) Oil-filled, coil-over shocks

WHEELS

Type Dish

TIRES

Type Taper Pin

ELECTRONICS

Transmitter Airtronics M8

Steering servo Futaba S9250 digital

ESC Novak Cyclone

Motor Trinity D4 12D

LIKES

- Tons of trick hardware included.
- Sealed drive train reduces maintenance considerably.
- Threaded shock bodies make preload and ride-height changes simple and precise.

DISLIKES

- Two instruction manuals required to build kit.
- If you do need to get at the belts or diffs, much disassembly is necessary.

building & setup tips

The Worlds kit includes Losi's standard Double-X4 manual as well as a Worlds manual that covers the additional parts and the steps required to install them. Follow Team Losi's advice and make notes in the standard manual to remind you of steps that require the Worlds manual. The 5 minutes you spend doing this can save you a lot of frustration.

The Double-X4 requires saddle packs. The manual includes a pattern for the jumper wire that connects the two 3-cell packs, but the suggested length is too short for the Worlds car; because its batteries sit lower in the chassis, you need more wire to clear the belt tunnel. Cut the wire about $\frac{3}{4}$ inch longer than is shown in the manual. If you plan to place the left side of the pack in the full forward position, you will need an even longer jumper wire. Test-fit before you solder.

A small 4-40 screw is supplied to pre-thread all the holes in the car; I suggest you use it. This will help you avoid breaking off any screws inside a part.

When you install the adjusting nuts for the shocks, thread them on until most of the shock collars have engaged the shock. Use an open-ended wrench to turn the collars down to approximately where they need to be. When I was putting them on my car, they were very hard to turn; but after a few turns with the wrench, I could adjust them by hand.

Some parts have an excessive amount of flashing left from the molding process. It doesn't affect the parts' performance, but it doesn't look very good either. Remove this flashing with a sharp hobby knife.

The rear suspension has been borrowed from the Double-X 'CR' kit. Composite outriggers on the rear differential reduce the drive train's rotating mass and put a little more pep into the Double-X4's step.

The threaded shock bodies on all four corners make adjusting ride height a snap. The front shocks have new internal springs that improve the car's overall handling.

YOU'LL NEED ■ 2-channel radio system ■ Steering servo (high-speed preferred) ■ ESC ■ Battery ■ Motor ■ Charger ■ Pinion gear ■ CA glue ■ Polycarbonate-compatible paint

COMPETITION	TEAM LOSI DOUBLE-X4 WORLDS				SCHUMACHER CAT '98				YOKOMO MX-4			
	Wheelbase	10.7 in. (272mm)	Width	9.7 in. (246mm)	Weight	57 oz. (1,619g)	Diff type	Ball	Chassis	Molded graphite	Street price*	\$299.99
	Reviewed in	5/00										

*Prices vary with location

KIT FEATURES

• **CHASSIS.** The chassis' design is the same as the one on the standard Double-X4. It features a forward-mounted motor for good balance and a completely sealed drive train that not only keeps dirt away from the belts but also helps stiffen up the chassis. All of the components have been molded in lightweight, graphite-reinforced plastic. Slots have been cut out in the rear of the chassis to allow the batteries to be mounted lower. Because the batteries sit lower in the chassis, the battery hold-downs have to be lowered as well. In the kit, you will find four small, square, plastic pieces with the battery hold-downs that have to be glued to the hold-down to lower one side. An extra hole in the body/battery mount lowers the other end of the hold-down, while a small oval foam spacer on the body/battery mount keeps the body in the correct position. The area under the motor has also been cut out to allow it to be mounted lower in the chassis, and it also provides better cooling.

• **DRIVE TRAIN.** In place of the "regular" kit belts, there are three heavy-duty belts in the drive train. Made of a stronger material, the new belts are less likely to skip. With stronger belts driving the car, you no longer need the small rollers that were used to tension the old belts. The rear differential also has one slight change to improve the car's acceleration: Losi includes a lightweight set of outdrives instead of the original heavy steel units. The front and rear diffs no longer have a one-piece thrust-bearing assembly; they now use separate thrust washers and thrust balls retained by the walls of the outdrives. A new motor-mounting plate offsets and lowers the motor slightly to improve side-to-side weight distribution and to lower the car's CG.

• **SUSPENSION.** Graphite front and rear suspension arms and shock towers complete the graphite package. The back end of the car uses the rear suspension components from the Double-X 'CR' kit and has 2 degrees of toe-in, while the front sports a new bulkhead that is stronger than stock. Thanks to its white color, the new bulkhead stands out from the rest of the car.

Threaded shock bodies on all four corners make adjusting the ride height a little easier and more precise. For long-lasting, smooth operation, titanium-nitrate-coated shock shafts are thrown into the mix. The front shocks use new internal shock springs that—according to Losi—allow you to have a higher front ride height without sacrificing all-around steering and drivability.

• **OTHER WORLDS STUFF.** The stock bushings for the steering have been replaced with smooth ball bearings for quick steering response. The two front steering linkages and all four upper suspension



Cutouts in the chassis allow the running gear to be mounted lower than on the stock Double-X4. The hole under the motor allows it to be mounted lower, and it also keeps it cool.

links have been replaced with beefy adjustable titanium units. There is no way you will ever bend one of these rods. Losi Silver compound Taper Pin tires provide the traction to propel this animal around the track, and they are wrapped around Losi's new dish rims.

A new body tops off this great package. It is similar to Losi's "hot weather" body but has an extra cooling hole near the speed control.

PERFORMANCE

I packed up the Dodge and headed to Big Boys Toys—an indoor off-road dirt track in Fall River, MA. This track is very small and tight, so I had to be on my toes when driving a 4-wheel-drive car with this much power! Once I was familiar with the layout, I was able to lay down the horses. The kit tires were dialed on this packed-clay track and provided enough traction to easily send the car sailin' over the doubles. The Double-X4 Worlds car felt very stable over the jumps. I was able to adjust its attitude in the air by slightly tapping the brakes or by quickly stabbing the throttle. This car's acceleration is very impressive—like a rocket out of the hole. The Futaba servo did a great job battling the centrifugal forces of the fast-spinning front tires, keeping the car pointed in the right direction under hard acceleration. The new, heavy-duty belts didn't skip once. The large open hole underneath the motor provided enough cooling and kept the temperature down to a minimum. I could actually hold my finger on the motor without burning it.

THE VERDICT

I'm not the greatest driver in the world, but I was able to pull off the win at an unfamiliar track with an unfamiliar car; that's good enough for me! This car is definitely worth buying. There are so many improvements over the original Double-X4, and it doesn't cost much more than a standard car. You won't have to spend time finding, buying and tweaking parts to build such a great car: Losi has done all that for you!

**Addresses are listed alphabetically in the Index of Manufacturers on page 216. ■*

Airtronics M8 radio

This radio has everything a diehard racer needs, and its large, easy-to-read, easy-to-use display allows you to make quick adjustments. Preferred by many top drivers, making the Airtronics® M8 my choice was a no-brainer.

Futaba S9250 digital servo

With a claimed torque output of 76.4 oz.-in. and a speed of 0.11 second at 4.8 volts, this Futaba® servo won't have a problem steering my car when I need it the most.

Novak Cyclone

Little, orange, programmable: this ESC has a lot of features in a small package. Besides being able to choose from three factory-set profiles (stock, drag brake, modified), you can create your own with Novak's® optional Pit Wizard or Profile software. The small solder taps make wiring fast and easy. When the left-side batteries are shifted forward, chassis space gets tight, and a small ESC can be a big help.

Trinity 3000 cells

These NiMH cells are the latest and greatest from Trinity®. I'm still getting used to dealing with the very different charging/discharging regimen that the new cell technology requires, but I'm loving the run time.

Trinity 12 double D4 motor

The D4 represents the latest in high-performance mod-motor design, but I'm most excited about its number-one convenience feature: built-in capacitors. Trinity installs three surface-mounted capacitors at the factory, so you don't have to solder the caps on before you install the motor. Oh yeah: the motor runs great, too.

Altech Ignition Racer

New, different, dependable by Chris Chianelli



Nothing keeps me as stoked about the hobby as something new—especially if it's something new *and* different. Oh, and did I leave out "ready to run"? The Compagnucci* Ignition Racer is all of these things. "New and different" also often means "unproven and quirky," but that's not the case with this car. With its gasoline/electronic-spark, digital-ignition MAC6 .40-size engine, the Ignition Racer is super dependable. It's as reliable as a leaf blower; it just keeps running. A quick swap of needle valves enables

the engine to be run on glow fuel, too, but a big part of the appeal for me is that it's a small car with spark-ignition/gasoline power. Other similarly powered cars are all much larger— $\frac{1}{4}$ or $\frac{1}{5}$ scale.

Although Compagnucci calls the Ignition Racer $\frac{1}{8}$ scale, the car really falls into a category all its own; nothing else quite matches its dimensions. Let's face it: though we do have true-to-scale $\frac{1}{10}$ and $\frac{1}{8}$ RC cars, these terms are used very loosely in our hobby and generally refer to types of

PHOTOS BY WALTER SOARS



racing, e.g., $\frac{1}{10}$ off-road, rather than accuracy of scale. The vehicle most similar to this one—in size, anyway—is the Kyosho SuperTen. The Compagnucci's wheelbase is about $\frac{3}{4}$ inch longer, and its track is about $1\frac{1}{2}$ inches wider. Some of you may be wondering about the availability of different bodies; besides the VW shown in this report, Altech Marketing, the distributor, offers a couple of other Compagnucci bodies that will fit the Ignition Racer's chassis—a Land Rover and a Mini Cooper.

DATA CENTER

VEHICLE TYPE: ready-to-run, $\frac{1}{8}$ -scale, 4WD, on-road gasoline/ignition

BEST BUYER: hobby enthusiasts looking for something different and reliable

KIT RATINGS (poor, satisfactory, good, very good, excellent)

Instructions: satisfactory

Durability: good

Overall performance: good

SPECIFICATIONS

SCALE $\frac{1}{8}$ (see text)

STREET PRICE (RTR, w/radio)

\$649

DIMENSIONS (chassis only)

Wheelbase 11.8 in.

Track (F/R) 9/8.75 in.

WEIGHT

Gross, RTR 106.56 oz.

CHASSIS

Type Resin composite tub

DRIVE TRAINS

Type Belt

Primary Clutch bell pinion and spur

Differentials Gear

Bearings/bushings Bushings

(wheels); ball bearings (drive train)

SUSPENSION

Type (F/R) Upper and lower A-arms with swaybars

Damping Plastic coil-over friction shocks

WHEELS

Type Gray, 2.5-in. 2-piece

TIRES

Type Low-profile, on-road tread

ELECTRICS

Ignition Digital with Ni-Cds

Radio Airtronics Rival Sport w/94102Z servos (included)

LIKES

- Engine reliability.
- Neutral handling.
- Starting system.
- Completeness of package.

DISLIKES

- Oil-filled shocks not included.
- Odd scale will not permit use of aftermarket bodies.



Compagnucci also offers this Land Rover body to fit the Beetle chassis. The Land Rover requires optional body mounts and larger tires and wheels. While the Rover may suggest off-road use, the Compagnucci chassis is strictly an on-road vehicle. The complete car can be ordered with a Rover, a Mini Cooper, or a Ferrari F-50 body. Both the Land Rover and VW were custom-painted by Motion Graphics.

The Compagnucci MAC6 engine is finely made in Italy, as is the entire car, and it features a belt-driven cooling fan. The cooling shroud directs lots of air exactly where it's needed—right across the head and cylinder cooling fins. With the air-filter canister removed, adjustment screws are visible. To the far right is the high-speed needle; at the bottom of the Venturi is the low-speed air-bleed screw; and at the top is the idle stop-screw. The spark-plug wire goes down to the electronic-ignition "black box" at lower right. This thing runs nicely.

Two Sanyo Ni-Cd packs (included) are in the box: one for the receiver and another for the electronic ignition. Compagnucci also supplies the charger.



On the left is a stock, 2 1/2-inch wheel and tire for the Beetle, and on the right is the 3 1/8-inch wheel and tire for the Rover. Shown in the foreground are 17mm adapters that will fit Mugen, Thunder Tiger and OFNA wheels, so you can get creative with the Compagnucci chassis.



The stock steering rods are not adjustable, but the car tracked straight ... right out of the box. Note the large upper and lower ball joints. Dogbones and output drive cups are featured on all four corners.

The cantilevered A-arm mounting point allows inboard shock placement both front and rear. Swaybars are at both ends.

YOU'LL NEED ■ Regular gasoline ■ 2-stroke oil

FACTORY OPTIONS ■ Oil-filled aluminum shocks ■ Tuned muffler

Left: with a 7-cell stick pack, this optional Compagnucci starter lasted for a day's running on a single charge. The shaft comes with the kit and can be used with any 3/8-inch-drive drill. You might also want to purchase this optional starter stand, too. Although not necessary, the two make starting and running up the engine a snap—very convenient. The car may also be push-started.

Right: Compagnucci offers an optional tuned muffler and a set of aluminum, oil-filled shocks. I recommend getting the tuned muffler. The MAC6 really came to life with it and ran cooler. As for the shocks, it's up to you; the car did handle very well with the stock, no-oil "shocks."



KIT FEATURES

- **CHASSIS.** This is a one-piece tub type molded from resin composite material. It has a grid pattern of ridges molded into its bottom, and it appears to be very rugged. The diffs and A-arm pivots all tie together rigidly between the front and rear chassis channels. The engine is secured to an aluminum plate on the bottom of the chassis, and the screws that pass through this plate are screwed directly into bosses cast on the bottom of the engine's crankcase, thereby eliminating the need for a separate engine mount; this means you'll have at least four fewer screws to worry about—again, a very solid setup. For head protection and ground clearance, the screw holes in the mounting plate have been countersunk.

- **DRIVE TRAIN.** This car has a classic touring-car setup with a pinion/spur-driven layshaft driving two belts that, in turn, drive the front and rear differentials. A few words of caution: like any other cog-belt system, this one is affected by small pebbles. The appearance of the Compagnucci Land Rover body may suggest that the chassis is suitable for off-road use, but it is strictly an on-road car and should be run only on fairly clean, paved surfaces. The entire drive train—layshaft, differentials and wheel axles—uses ball bearings, and this makes it very smooth running. The composite disc brake is at the end of the layshaft, opposite the spur gear.

- **SUSPENSION/STEERING.** All four corners have upper and lower A-arms that support fairly large steering-block upper and lower ball joints; the upper A-arms all have cantilevered, inboard shock-mounting points. The shocks, I'm sorry to say, are not oil-filled; they are what we euphemistically refer to as "friction shocks." Compagnucci does offer aluminum-body, oil-filled shocks, and I would like to have seen them supplied with the car. (Not a really big deal; the car handles quite well as is.) The steering rods directly connect the steering-block arms and the servo via a heavy-duty servo-saver—again, a standard touring-car-design practice. The steering rods are not adjustable, but everything is lined up right on the money; hands-off, the car tracks very straight. Swaybars are stock equipment both front and rear.

- **ENGINE AND ACCESSORIES.** The Compagnucci MAC6 is a jewel and is (at least, for me) the central point of interest. The engine runs on regular pumped gasoline, with 6 percent 2-stroke oil added for break-in and 5 percent thereafter; for each gallon of gas, this converts to 7.7 and 6.4 ounces of oil, respectively. Any oil you can use in a weed trimmer will be fine for the MAC6. On this mix, the Ignition Racer will run all day long for pennies.

The other fascinating thing about the engine is that you can run it on glow fuel simply by unscrewing the long, gasoline needle valve and replacing it with the conical needle valve that's used for glow fuel. After that, you can opt for the tuned muffler. And if the nitro/tuned muffler combo goes beyond the digital ignition's rpm capability, you can easily install your favorite glow plug; that's because the included spark plug has the same thread as the glow plugs we're familiar with. This engine's great hop-up potential is another part of its appeal. On gasoline/ignition, however, the car really has very good performance and is so reliable that I suggest leaving things alone—at least for a while. Anyway, that's my opinion, and Steve Pond, who ran the car with me, agrees. And you guys know how hard it is to please him! If you would like more details on the MAC6 engine, refer to the August '99 issue of *RC Car Action*. I devoted that month's "Piston Power" column to this unique powerplant.

Another nice thing about this ready-to-run car is that, except for fuel and dry cells for the transmitter, it comes with everything you'll need to run it: a charger, Ni-Cd batteries, a starter shaft and a carrying case. The starter shaft, which connects to any $\frac{3}{8}$ -inch-drive drill,



The Ignition Racer chassis as it comes out of the box. The package includes an Airtronics Rival Sport with 94102Z servos. The car, however, is available without a radio.

starts the engine by linking up to the layshaft. It's a simple, one-way bearing system that works very well. Oh, yes; this same shaft, with the addition of an included "T" handle, is also used for wheel removal. Also included is a 30-minute charger that charges both onboard Ni-Cds at once. The unit works off any 12V DC source, such as an automotive battery.

PERFORMANCE

Steve and I broke in the engine on a cool day with the recommended five tanks of fuel with 6 percent oil; as I mentioned earlier, 5 percent is recommended there-

after. After the engine was well broken in, I tried switching back and forth between 5 and 6 percent, and I didn't notice any difference in performance in terms of top-end or throttle response, so now I run 6 percent all the time. A bit of extra oil can't hurt, and it can really help, if you—like Steve—love to lean things out.

Since it's a gas-powered car, we thought its top speed might be mediocre, but the displacement is twice that of a glow-powered, $\frac{1}{8}$ -scale car. As it turns out, the extra displacement pays off; the car is fast—not "screamingly" so like an all-out, $\frac{1}{8}$ -scale, nitro-toastin' road machine, but you can fatally slam this thing into a curb just as easily as any glow-powered car. We clocked the stock car, including exhaust system, at 36mph—pretty good. That was with Steve at the needle valve; I opted to back it off just a touch and adjust for 1 or 2mph less top end. If the car's mid-range is properly adjusted for good throttle response (the MAC6 carb has a low-end-mixture air-bleed adjustment), that is what's going to give you better lap times—not squeezing the last mile per hour out of your engine. OK; I'll climb down off my soapbox now.

One thing that Steve and I really liked about this car was its super neutral handling. It was so easy to "snake" through the turns—a total pleasure to drive. It has just a touch of understeer, and power-on sweeps were very easy to keep under control with a balanced application of throttle and steering. The car always gave plenty of warning by getting a bit "loose" before swapping ends—very predictable. We were quite amazed at how well the car's suspension kept its cool with no oil damping. I can only imagine how silkily the car would drive with a set of optional, oil-filled shocks. I was skeptical of the tires at first, but I was wrong. On our black-top, they hooked up with just enough traction—not too much; not too little. The disc brakes worked well, and it was possible to lock up all four wheels from time to time. If you want "on-command" wheel lock-up (some people do), a servo with higher torque would be in order. Gearing was on the tall side. I would have preferred a slightly lower ratio, but I guess that also depends on where you run. Overall, the car was fast, fun and easy to drive.

ALL IN ALL

Hobbies wouldn't keep our interest without new and novel products. This product, however, is far more than just "novel." It's a reliable car that's very interesting and would make a fantastic first gasoline/ignition car. It's fast, but if you want even more speed, it's a matter of simply screwing a part in—or on. And then, of course, there's the nitro factor! There are a lot of ways to go with this one, so you're not likely to be bored. True, because it's different, not a lot of bodies are available for it yet, but Compagnucci is sure to release others. Moreover, who knows what bodies an inventive modeler would be able to fit on this chassis? And since it's in a class by itself, the question remains: which cars could I race it against besides other Compagnucci cars? Those two (as yet) unanswered questions aside, I can't think of anything cooler than a field of gas-powered, digitally timed, spark-ignition, fan-cooled, easy-to-drive cars in a 6-hour enduro race. Have you ever driven in an enduro? I have, and nothing is more fun; with Compagnucci's Ignition Racer, it would be a blast!

*Addresses are listed alphabetically in the Index of Manufacturers on page 216. ■

OFNA Pirate 10 Truck RTR

A flatbed facelift for
the Pirate 10 by Peter Vieira





Quick; name a category of vehicle

that isn't available as a ready-to-run. I hope you didn't say "4WD nitro truck" because OFNA* now offers just such a vehicle, completely assembled and equipped with an Airtronics Rival radio. The new machine is built on the Pirate 10 Evo buggy platform—a capable performer (albeit one with no real competition, since high-performance 4WD nitro buggies are hard to come by). The Pirate 10 truck appears to be engineered for high performance and low fuss, and there are plenty of gee-whiz features and eye candy for those of you who are as impressed by the cool factor as you are the fun factor (you can include me in that group). Let's drive.

PHOTOS BY WALTER SODAS

DATA CENTER

VEHICLE TYPE 1/10 scale, .12-powered, 4WD, shaft-drive off-road RTR truck.

BEST BUYER nitro newcomers; any one looking for a fun, off-road nitro vehicle.

KIT RATINGS (poor, satisfactory, good, very good, excellent)

Instructions satisfactory

Parts fit/finish very good

Durability good

Overall performance good

SPECIFICATIONS

SCALE 1/10

STREET PRICE \$349

DIMENSIONS

Wheelbase 11.2 in. 275mm

Width (F/R) 12.2 in. 310mm

WEIGHT

Total, as tested 70 oz. (1,984.5g)

CHASSIS

Type Double-deck

Material 2mm aluminum

DRIVE TRAIN

Type Shaft

Primary Pinion/spur gear

Drive shafts Plastic dogbone

Drive axles (F/R) CVA/dogbone

Differential(s) Gear

Clutch 2-shoe

Bearings/bushings Rubber sealed bearings

SUSPENSION (F/R)

Type Upper/lower wishbones/upper wishbone/lower A-arm

Damping Oil-filled, aluminum-body shocks

WHEELS

Type 2.2 in., one-piece plastic

TIRES

Type Ho Bao Racing X-pattern

INCLUDED ENGINE AND ACCESSORIES

Engine Force .12

Carb Rotary

Starter Pull-starter

Pipe/Manifold Expansion muffler

INCLUDED ELECTRONICS

Transmitter Airtronics Rival

Steering and throttle servos Airtronics 94102

LIKES

- Red-anodized chassis separates the Pirate 10 from the blue-aluminum masses.
- Lots of bonus features such as front universals, sealed bearings and aluminum diff cases.
- Attentive factory assembly with name-brand radio gear.
- Glow starter and fuel-tank filler included.

DISLIKES

- Factory-filled shocks offer too little front damping and too much rear damping.
- Springs are too soft.
- Body is boxy and unpainted.
- Poor low-end needle access makes carb tuning a chore.

building & setup tips

It's an RTR kit, so there's little left to build. However, you will need to reach for a few tools before you hit the track. Here's what to expect:



Along with the radio gear, OFNA supplies a handy soda-bottle fuel spout, a glow igniter and heavy-duty box wrench with the Pirate 10 Truck.

The Force .12 engine proved reliable, but the low-end carb-needle access is poor because of the position of the airplane-style muffler.



Receiver battery installation. OFNA supplies a 4-cell AA battery holder; use alkaline cells for the best performance, or upgrade to a 5-cell Ni-Cd pack. You'll have to remove two screws to slide the pack under the receiver tray/battery holder—no biggie.

Receiver switch installation. This is a non-tip, as I skipped the switch and plugged the receiver pack directly into the receiver. To switch off the radio gear, I simply unplug the battery. The kit includes the switch harness, but there is no bolt-in mounting location on the chassis. Servo-taped switches aren't a good match for gas cars, so I went the switchless route.

Body-post setting. The Pirate 10 includes adjustable body posts that can be left at full length without interfering with any moving parts. If you like the look of my test truck, set the posts four "clicks" up from the lowest position.

Body painting and mounting. To me, a kit isn't truly RTR without a pre-painted body, so I'm bummed that the Pirate 10 needs paint. OFNA does trim the wheel wells for you, but the cutting isn't precise; I retrimmed the wells for a neater look. Before painting, line up the body on the chassis and mark the body-post locations.

YOU'LL NEED ■ Nitro fuel (15 to 20% nitro) ■ 1 C-size alkaline battery for glow-starter ■ 8 AA alkaline batteries for transmitter and receiver power ■ Empty soda bottle for use as a fuel bottle ■ Polycarbonate-compatible paint

FACTORY OPTIONS ■ Force 15R rear exhaust engine—part nos. 50152, 50153 (w/pull starter) ■ Aluminum transmission bulkhead—17982 ■ Adjustable aluminum engine mounts—17011 ■ Steel spur gear—17076 ■ Aluminum 2-speed transmission—17770 ■ Nylon 2-speed transmission—17075 ■ Vented stainless-steel brake disc—17125

Left: the adjustable camber links pivot on oversize steel ball ends, but the ball cup does not rotate on the ball; instead, the ball threads into a sleeve that turns in the mounting hole. Right: the front hubs are made of cast metal and feature travel stops, and the 12mm hub hexes are aluminum. Carrier-less designs like this usually allow caster to be adjusted, but the Pirate's caster is fixed; camber is adjustable.

KIT FEATURES

• **CHASSIS.** Unsurprisingly, the Pirate 10 truck chassis is nearly identical to the Pirate 10 buggy's setup. The differences are few: the truck has a wider front shock tower that is designed to accept body mounts but offers the same shock geometry as the buggy; and the truck's aluminum parts are anodized red instead of the buggy's ubiquitous blue. From here on out, all the features mentioned can also be found on the Pirate EVO buggy.

The main chassis plate has deeply channeled sides that almost qualify the design as a tub. There are no other bends in it, and that means there's no front kick-up (although some caster is built in to the front end; we'll talk about that later). A pair of upper decks clamp the front, rear and center diffs to the lower chassis, and all the chassis holes are countersunk with the exception of the engine-mounting slots. Here, low-profile screws are used along with pan washers to present a relatively unobtrusive profile.

Most double-deck nitro chassis have the servos mounted on the upper deck, but the Pirate 10 uses a small subtray instead. Four aluminum standoffs hold the throttle and steering servos side by side with their output shafts upward. This allows short, straight linkage throws and a nicely symmetrical look.

• **SUSPENSION/STEERING.** Red-anodized aluminum shocks hold the chassis off the ground and feature clamp-type spring collars to provide fine preload adjustments. From the factory, the collars are set for minimum preload, and the truck's ride height is very low for an off-roader. The shocks arrive filled with oil, and they operate very smoothly, but the damping is much too heavy in the rear and a little too light up front. Notably, the rear suspension is fitted with a swaybar; it will be interesting to see how this setup works.

The front suspension is a double-wishbone setup with threaded upper links to allow camber adjustments. The arms have an aerodynamic, organic look, and in the case of the lower arms, there are no reinforcing webs; as a result, the arms feel very flexible, and this will hopefully benefit durability more than it affects handling. The rear arms are similarly constructed and allow the wheelbase to be lengthened 4mm by changing the positions of the rear hubs on their hinge pins. Speaking of hinge pins, aluminum braces support the in-board hinge pins at both ends of the truck.

Front and rear shock positions can be altered by selecting one of three lower shock locations on the arm and two on the shock tower, and there are two possible positions for the rear, outer camber link. Only caster isn't adjustable, as the front upper arms are fixed.

A pair of bellcranks with a built-in (albeit non-adjustable) servo-saver handles the steering chores and are joined by means of a heavy wire drag link. Setscrews hold the link in place and eliminate the need for Z-bends that lead to distorted pivot holes and their attendant sloppiness. The bellcranks are connected to cast steering knuckles by threaded tie rods, and the hubs include cast-in stops to prevent excessive steering travel from popping a linkage in a crash or under hard use.

• **DRIVE TRAIN.** The Pirate 10 chassis is essentially a scaled-down version of an 1/8-scale buggy; this

means full-time, shaft-driven 4WD with three differentials. OFNA includes some unexpected features in this department: the diff cases are aluminum; 16, rubber-sealed ball bearings keep everything rotating smoothly; and the front and rear diffs are spun by steel, "spiral-cut" ring and pinion gears (translation: they should be bombproof). The truck's main gear is plastic, but it is as wide as the plastic main gears on many 1/8-scale buggies, and it should hold well enough. The only other plastic drive-train parts are the dogbones that link the three diffs. OFNA claims the plastic units were selected to reduce metal-on-metal chatter and the radio noise it can create. Makes sense to me, but all I really care about is how well they hold up.

The front axles are OFNA CVA (constant-velocity axle) units, and they operate with nearly zero backlash; on a truck that you'd expect to include dogbones, these are an especially nice touch. Dogbones do outfit the rear transmission, but that's a much more acceptable application.

A single fiber disc brake encircles the center diff to stop the Pirate and gets the pinch from a pair of steel pads. A tiny spring between the pads forces them apart when the brake arm is released, and this minimizes disc wear and allows the Pirate to coast very efficiently.

• **ENGINE AND ACCESSORIES.** I had a very good experience with the Force .12 engine when I tested the OFNA Nitro Colt Mini (August '99 issue). According to OFNA, the piston and sleeve get the full "ABC" treatment (aluminum piston in a brass cylinder that is chrome plated). The rotary carburetor has a 9mm intake that tapers down to a 5mm opening at the barrel, and it's a 2-needle carb, so there should be no problem getting the mixture spot on.

A cast, expansion-style muffler is bolted to the engine and uses a long rubber stinger to vent exhaust through the rear shock tower. Though acceptable for the truck's fun-run mission, performance-minded enthusiasts will be bummed because a tuned pipe cannot be fitted unless a rear-exhaust engine is fitted, too.

The Force mill includes the expected pull-starter, but its design is unique in that it does not rely on a one-way bearing. Instead, a spring-loaded pin engages a ramped drive step to kick the engine over while allowing the crank to spin freely once the engine fires. Of course, you'll need a glow plug to fire up the engine, and if you root around in the box, you'll discover that OFNA includes a genuine Picco glow plug; no RTR should be without a glow plug, and OFNA supplies a very good one.

A uniquely shaped, low-profile fuel tank completes the power package. A splash guard is molded into its top to channel spilled fuel down to the chassis (I plan to install some tubing so the fuel runs off the chassis instead of onto it). The tank doesn't have an internal filter, but it does feature a turned-aluminum primer button that seems well sealed, so I'll leave it in place, but if it appears to leak, I'll drill it out and seal the hole for good.

• **BODY, WHEELS AND TIRES.** This is the only area in which the Pirate 10 truck left me flat: the included

INCLUDED TEST GEAR

Airtronics Rival transmitter and receiver

I prefer to see radios with endpoint adjustments included with nitro RTRs, but in terms of reliability,

there's no faulting the Rival—especially if you pick up a kit with a 27-band system, as I did.

The Pirate 10's linkages are designed to absorb any unneeded servo throw, and I had no problem dialing in the Rival.



Airtronics 94102 steering and throttle servos

These are the standard units supplied with the Rival radio. Each is good for about 40 oz.-in. of torque, which is fine for the throttle and brake but a bit anemic for the steering, particularly with the widely offset truck rims and low-leverage buggy steering knuckles. Though adequate for playing around, a stronger steering servo would be a welcome addition if you want to tweak out the Pirate 10 truck for maximum performance.

OFNA alkaline glow starter and fuel filler adapter

These are two must-have items that are inevitably forgotten by first-time nitro buyers, so OFNA deserves a big hand for including them. The plastic glow-starter accepts a standard C-size battery, which you can take out of a flashlight or pick up at a convenience store on your way to the track. And since the glow-starter's body is plastic, the battery won't deplete itself while not in use.

Instead of supplying a fuel bottle, OFNA includes a spout that is designed to replace the cap of a soft-drink bottle to convert it to fuel use. The conversion is a two-step process: first, install the spout; next, **remove the soft-drink label!** If you don't, someone might accidentally take a big swig of nitro; sure, that would make them sick, but more important, it would be a big waste of your fuel!

body is inoffensive but certainly not a head-turner (but I do award bonus points for the molded roll cage and generous front bumper/brush guard), and the vanilla-white wheels with Ho-Bao Racing Team tires are merely functional (but they are factory-glued).

The rims are mounted on the axles with 12mm aluminum hexes, so stylish rims offered by Pro-Line*, HPI* and Traxxas* to fit the 12mm hex can all be used, and there's no shortage of rubber to cover the rims you choose. (Check out the "Truck Tire Guide" in the April issue for details.)

If the truck has to have some weak points, I'm glad they're in the esthetic department and not deep in the chassis or engine; after all, no one ever has to quit a day of RC fun early because his truck didn't look cool enough.

PERFORMANCE

The Pirate 10 truck is powered by the same Force 12 as is used in the OFNA Nitro Colt Mini. I had good luck with the little mill when I tested the Mini, but I had a more difficult time getting the truck's engine to fire up. I suspected the low-end needle was set a bit too rich, but because of the exhaust system's position, it was virtually impossible to adjust. I managed to get the engine started after a lot of yanking and some hacking at the low-end screw. That was no picnic, but once I had the Force 12 fired up, it idled reliably.

I cruised around at low speed for a few tanks then leaned out the engine as the piston and sleeve got to know each other. The Pirate 10 Truck won't challenge a 2WD nitro racetruck off the line, but it does pull hard enough to entertain; you won't wish it had more power.

I noticed the rear end squats considerably under acceleration, and thanks to the soft springs and heavy damping of the rear suspension, it tends to stay hunkered down until the brakes are applied. The single-disc brake has plenty of stopping power, but

the front end dives heavily; the front shocks have reasonable damping, but as in the rear, the springs are too soft.

The unusual suspension setup tends to make the Pirate a handful to jump, since the soft front end tends to absorb the jump while the packed-up rear shocks want to sky off the lip. I found the best way to keep the truck level was to floor the gas as soon as the truck cleared the lip; with all four tires spinning, the Pirate will flatten out in time to avoid a nose-first wreck

Not that I didn't have a few nose-first wrecks! The truck's mongo front bumper protected it from being damaged, and the suspension arms were intact even after a few hard cartwheels. I was expecting at least one arm to pop, since we did break one when we tested the buggy version of this chassis, and the truck's deeply offset rims apply more force to the arms. But, as I said, nothing broke. I'm always glad when I can go home without parts in my pocket.

THE VERDICT

This is a fun truck, but I wish it were prettier; the shoe-box body and vanilla wheels don't do it for me. If you feel the same, don't worry; a set of RPM* or Pro-Line rims and a fresh body can easily be fitted thanks to the Pirate's 12mm axle hexes and adjustable body posts.

Performance-wise, the suspension needs some dialing in to get the most out of the truck, but if you just want to bash around for fun, the truck won't frustrate you out of the box—at least, it won't after you get the low-end needle set. The Force 12 ran strong for me and was very reliable, which is everything when you're running for fun.

The name-brand radio is good to see, and the included glow-starter and fuel-filler adapter are real bonuses. On the whole, OFNA has done a good job with this RTR.

*Addresses are listed alphabetically in the Index of Manufacturers on page 216. ■

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Trinity D4

by Steve Pond



Modified electric racing has always taken a back seat to the stock class in participation nationwide. However, the modified class has consistently attracted the world's best driving talent at the most prestigious racing events.

Trinity*, which has pioneered many of the innovations seen in electric motors, fired the latest shot in the power wars of modified racing with the introduction of the D4 Copper Head motor. This motor represents the latest in high-performance technology from Trinity and features a host of innovations.

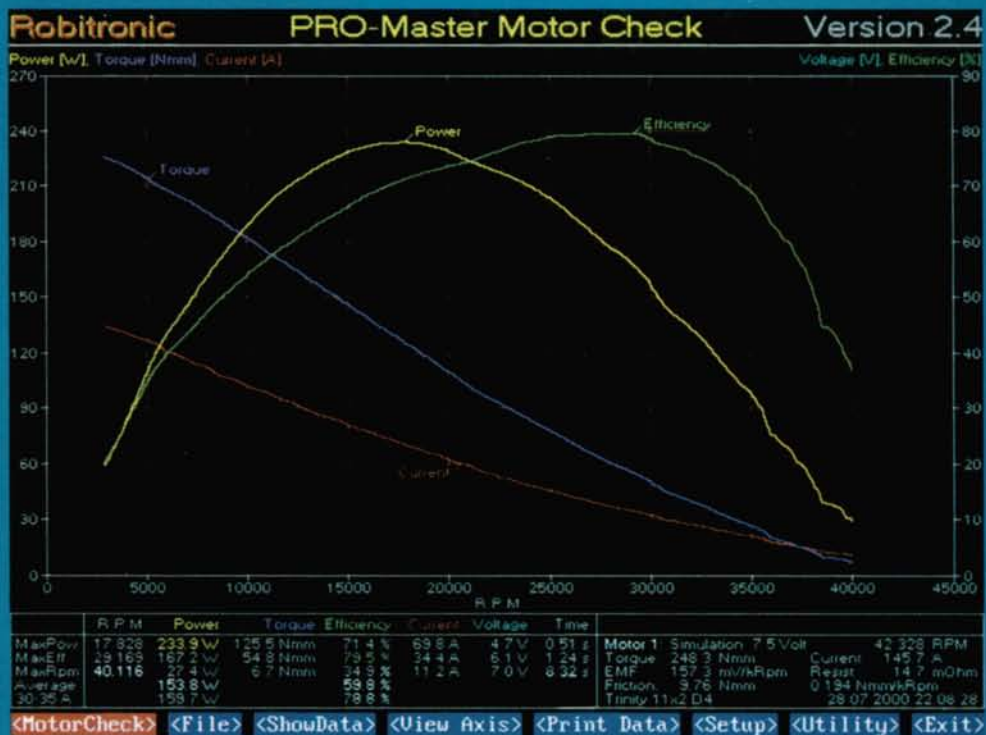
■ **CAN.** The D4's shell is a 1.4mm can with a black crinkle finish. According to Trinity, this coating is supposed to provide better heat dissipation. The can doesn't have large vents around its circumference or on its mounting surface. Trinity claims that large vent holes compromise the integrity of the magnetic field and result in a subtle loss of efficiency and torque production. It's what's inside the can, however, that

How fast is it?

DYNO TESTING

I tested a total of eight D4 motors, though the primary focus of this article is on two of Trinity's most popular winds—11- and 13-turn doubles. All of the motors were tested straight out of the box because they are sold broken in and ready to run. Additionally, they include premium brushes and springs, so there is no need to get into "tweaking" as I would with a stock motor. The dyno-test parameters were set to the standard default of 7.5 volts, modified rpm detection and a maximum setting on the current limiter of 150 amps.

11-TURN DOUBLE. The 11-double tested uses the thick-web armature and a standard hemi pattern wind. Maximum power was measured at 233.9 watts at 17,828rpm; efficiency is average at just a tick below 80 percent; torque is measured at 125.5 Nmm at maximum power and 248.3 Nmm peak torque. I compared these results with those of my best 11-double D3.5 motor. Maximum power outputs were virtually identical, as were rpm measurements. The notable difference is the production of torque. The D3.5 produces an average of 120.8 Nmm at maximum power output and peaks at 237.1 Nmm.



is one of the D4's truly unique features. For the first time ever, the industry has a modified motor with removable magnets. Trinity devised a clever system of stops indented in one side of the can and a slide-in clip on the other to secure the magnets. The obvious advantage is that the magnets can be replaced when they begin to lose their strength; there's no expense of buying a new can or even an entire motor.

Trinity also parlayed this feature into another innovation based on a lesson learned years ago in manufacturing slot-car motors—matched magnets. Trinity matches the magnets that go into every D4. Using a gauss meter to measure the magnetic strength of each one before it's placed in the can, Trinity pairs magnets of similar strength. All other motors, including Trinity's previous D3.5, have the magnets epoxied into place at the factory. If the magnets are of different strengths, Trinity claims it creates a condition in which the magnets "fight" each other—something like trying to race a horse with stubby front legs. The process of matching the magnets, irrespective of relative strength, keeps the magnets "in phase" with one another, and improves overall performance.

■ **ARMATURE.** Trinity uses two armatures in the D4, depending on the number of winds. Motors above 12 turns use a thin-web armature; motors in the 12-turn and fewer range take advantage of a beefier armature with a thicker web. Some winds use armatures of both styles, but 12 turns are usually the benchmark. The purpose is to balance the wire-to-metal ratio of the assembled armature. According to technology that's way above me, there is supposed to be an ideal ratio of wire-to-armature mass to maximize performance. According to this principle, using a single armature for a wide variety of configurations isn't ideal. If an armature is best suited to a 13-turn setup, using the same armature with more turns (15 or 16, for example) would result in good torque output but in a disproportionate loss of rpm.

The opposite is true of motors that have fewer turns. Nine-turn motors, for example, would be able to produce very high rpm but would fall short in the torque department. Yet another available option related to the armature has to do with the wind

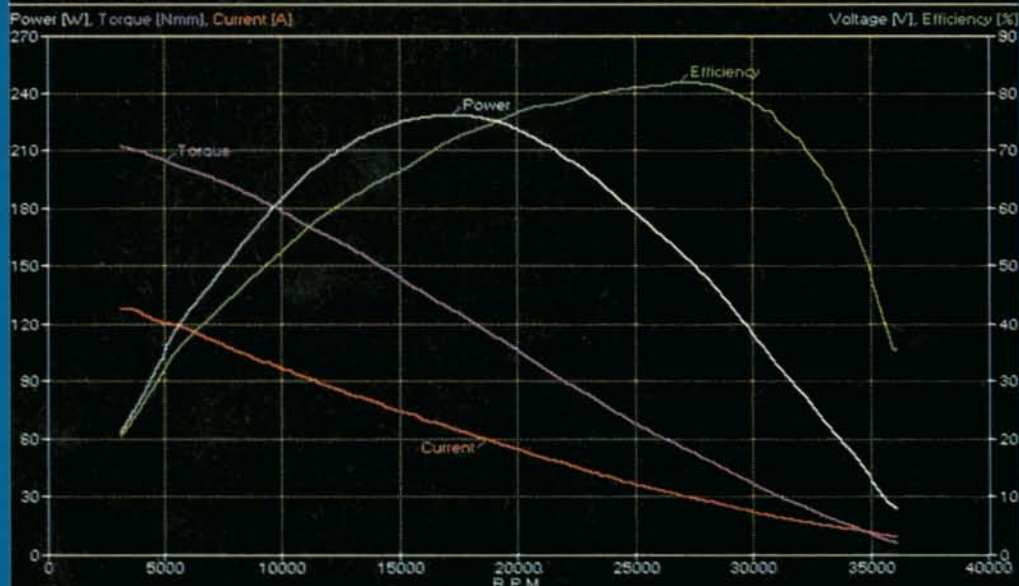


The armature with the groove on the crown (left) features a thick web for motors with 12 turns or less. The thin-web version (right) is for motors with more than 12 turns. Using different arma-



tures is claimed to provide better wire-to-metal ratios and make power delivery more consistent across a variety of winds.

Robitronic PRO-Master Motor Check Version 2.4



13-TURN DOUBLE. The 13-double tested uses the thin-web armature and a standard hemi pattern wind. Maximum power was measured at 228.8 watts at 17,220rpm; efficiency is respectable at 81.9 percent; and torque output is 127.3 Nmm at maximum power and 236.8 Nmm peak. Compared again with a D3.5 of the same configuration, the D4 loses 7.5 points in torque at peak power and 23.9 Nmm at peak. Max power of the D3.5 is 215.7 watts at 15,320rpm. That gives the D4 a respectable advantage of 21.1 watts and 1,900 additional rpm at peak power output.

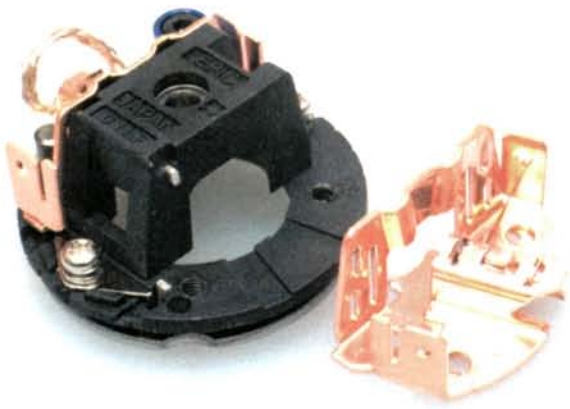
9-TURN DOUBLE. Although it wasn't the focus of my testing, I strapped a 9-turn double D4 into the dyno for the supreme test of the new armature. If the thick-web armature is supposed to improve the development of torque in low-turn motors, this is where it's going to live or die; 9-turn motors are characteristically poor at torque production and big on rpm. A quick test of a new D4 9-turn netted 251.2 watts of power at 21,041rpm. Torque at maximum power is a very healthy 114.2 Nmm and a peak of 223.1 Nmm.

MotorCheck <File> <ShowData> <View Axis> <Print Data> <Setup> <Utility> <Exit>

configuration rather than the stacks. Trinity also offers what's called a High-Variance (HV) Split Double wind that uses one strand of thick wire and one strand of thin. This is supposed to reduce inductance and make throttle response a little more crisp for high-traction applications like touring cars and 4WD buggies. I unfortunately didn't get a chance to test one of the HV motors because they were not available during testing.

■ **ENDBELL.** The endbell is where the D4 gets its "Copper Head" trademark. Affixed to the endbell are pure copper heat sinks and brush hoods. The purpose of using copper hardware is to take advantage of the reduced resistance copper offers and get more power through the brushes to the armature. Copper is soft, so it's more susceptible to breakage if bent back and forth, but Trinity is already

The D4 has pure copper heat sinks and brush hoods. Copper is an excellent conductor, so it allows more power to get through to the motor. The design of the soldering tabs is being changed to prevent the softer copper from breaking if it's bent too much.



The built-in surface-mounted capacitors are visible when the brush hood is removed. The D4 motors have three capacitors—the number recommended by most radio and speed-control manufacturers.

working on an update for the brush hoods/solder tabs to make them as durable as possible. The brush hoods are affixed to the endbell using a standard spring post on one side and an Allen-head screw and blue-anodized aluminum heat sink on the other. Brush vibration dampers are also installed in the top of both brush hoods. Trinity has also installed surface-mount capacitors in the endbell, thus eliminating the need to solder capacitors on the motor prior to installing it. This technology was first seen in Orion's chrome modified motors, but Trinity one-upped it by including a third capacitor.

MOTOR LABELS

Trinity dyno-tests every D4 and attaches a label to the motor itemizing the critical performance data. This data helps educated consumers with information that can help them make the proper buying decision. During my testing of the D4 motors, I found that the numbers I was getting from the Robitronic dyno (the equipment used by Trinity) is generally much higher than indicated on the label. Upon further investigation, I found Trinity uses clamps to attach the test leads to the motors (a necessity based on the volume of motors tested daily). I always solder the leads to the motor as recommended by the dyno instructions. This subtle difference is appar-

ently what accounts for the discrepancy in the numbers. My point is, you can count on these motors performing better than indicated by their label. It isn't a bad thing—just helpful to know that motor performance easily exceeds the label's claims.

It's worth noting that removable magnets introduce the issue of maintenance to modified racers. Whenever magnets are removed and installed, it's critical that the inside of the motor can and the magnet's outer surface be clean and completely free of debris. The tight tolerances between the magnets and armature are such that even the smallest piece trapped between them will cause interference. The armature will probably come into contact with the magnets, and that can introduce a host of other problems. Just be aware that you need to take extra care in this area when you're doing maintenance jobs.

The magnet issue brought an oversight to my attention. Replaceable magnets are new for many of us, including me. As I attempted to remove them for inspection, I realized they are pretty tough to dislodge, even with the magnet clip removed. I ended

up jolting the can with the palm of my hand in an attempt to dislodge the magnets from the side of the can. This proved to be the wrong move, as I chipped a corner of both magnets. After installing a new pair of magnets, I quickly found the best method of removal is to slide the magnets away from the indents in the can that hold them in place. As it turns out, the indents still maintain a firm grip on the magnets even after the magnet clip has been removed. By sliding the magnets away from the indents, you make it much easier to pry the magnets away from the can with your finger so you can remove them. Just be careful not

to slide the magnets too far around the can. The magnets are extremely strong and can be tough to separate if they come into contact with each other. When installing them, it's important to note that the magnet that's white along its top edge with a red dot is the positive one. Be sure to line up the positive side of the endbell (timing adjustment notwithstanding) with the positive magnet. Getting back to my original point: the oversight is that magnet removal and installation procedures aren't outlined in the instructions.

FINAL ANALYSIS

The Trinity D4 series offers a measurable improvement over any of the company's past offerings. The combination of the new can, armatures and endbell and the option of standard or HV winds offer racers more application-specific mills than ever before. The can's modular design and replaceable matched magnets also score points for those of us who watch our wallet. It simply costs less to maintain a strong level of performance with the D4.



Each motor has a label that shows its dyno-test data. Although the label data is relatively consistent from one motor to the next, the tests conducted for this article showed considerably better numbers. On our dyno, this motor produced: 42,328rpm; 233.9 watts of power; 79.5 percent efficiency; 248.3 Nmm torque.



The magnet clip slides between the two magnets to hold them firmly in place. Once the endbell has been installed, the locking ring prevents the magnet clip from working its way out of the can.

*Addresses are listed alphabetically in the Index of Manufacturers on page 216. ■

Kinwald Scores a Perfect 10 for Trinity and Team Losi

Team Trinity/Team Losi factory driver Brian Kinwald got his name in the record books by becoming the only driver other than Team Associated's Cliff Lett to score a perfect 10 points at the Reedy International Race of Champions. Kinwald scored five first-place finishes in 2WD and added five more wins in 4WD to attain a score of 10 points—the lowest score possible. This was Kinwald's second Invitational-class victory at the Reedy Race; Masami Hirotsuka and Mark Pavidis are the only other drivers who have captured two Reedy Race championships (again, other than the now-retired Cliff Lett).

The success of Trinity and Team Losi carried over to the Open classes as well when team driver Trevor Adamo won the 2WD A-main by a large, 4-second margin and then lapped the field in the 4WD Open class. Both Brian Kinwald and Trevor Adamo drove Team Losi vehicles, and both drivers used Trinity's Panasonic 3000mAh NiMH cells and D4 modified motors. We'll provide complete coverage of the 14th Annual Reedy International Race of Champions in the next issue of *RC Car Action*.



TRINITY TO OFFER SANYO 3000 CELL



Sanyo will soon produce a 3000 NiMH cell for the RC market, which will compete directly with Panasonic's landmark cell. Sanyo's patented collector design has typically resulted in cells with higher voltage and less internal resistance than those from competing manufacturers, so we should see some interesting battery battles. Sanyo's new cells will reportedly be available exclusively through Trinity in the U.S. sometime in early summer.

Jason Ruona Joins Team Losi

Team Losi has picked up Jason Ruona, formerly of Team Associated. Jason has relocated to Florida and will be racing all of Team Losi's vehicles, including the Street Weapon, with Trinity power. Why did he switch cars and coasts? I called Jason at his new Florida digs for the scoop.

"I bought a house here, and I'm starting an architectural design company; basically, I'll be drawing houses. I'll be able to work with my dad, who is a general contractor. I'll also be doing some product stuff with Team Losi as a sort of consultant. It's a great opportunity. I was with Team Associated for eight years, and I just wanted to make a switch. I don't have a bad thing to say about Team Associated; they're great."



Hobby Shack adds Super Nitro Class to 2000 Race Schedule

Hobby Shack has announced its intention to add a Super Nitro class to the 2000 parking-lot racing schedule. HPI, Tamiya, Kyosho and all other cars that fit the Super Nitro designation will be legal. Because of the larger size and potential speed of these vehicles, the class is being offered only to expert racers who intend to drive cleanly. Additionally, only .12 and .15 side-exhaust engines may be used (no big blocks), and all vehicles must be equipped with a throttle-return spring. Factory and aftermarket hop-ups, including 2-speed transmissions and tuned exhaust systems, will be allowed. If you live in Southern California or Las Vegas, NV, and you have a Tamiya TGX, an HPI Super Nitro RS4 or a Kyosho SuperTen, get it ready to race. Here's Hobby Shack's race schedule for the first half of 2000, including store locations and phone numbers.

Sat., March 11—Riverside, (909) 785-6773.

Sun., March 26—Fountain Valley, (714) 964-8846.

Sat., April 8—Rancho Cucamonga, (909) 463-0557.

Sun., April 30—Las Vegas, NV, (702) 871-6191.

Sat., May 13—Mission Viejo, (949) 364-3330 (electronics only).

Sun., May 21—Fountain Valley.

Sat., June 10—Rancho Cucamonga.

Sun., June 25—Riverside.

BW RACEWAY MOVES INDOORS

BW Raceway in Riverside, CA, recently moved and now offers indoor, on-road racing. The new facility is much larger and has a large carpet track is designed for touring, Pro 10 and 1/12-scale racing. BW Raceway also plans to build an outdoor, on-road track for nitro-powered touring cars.

BW Raceway, 12321 Sampson St., Riverside, CA 92503; (909) 486-9315.



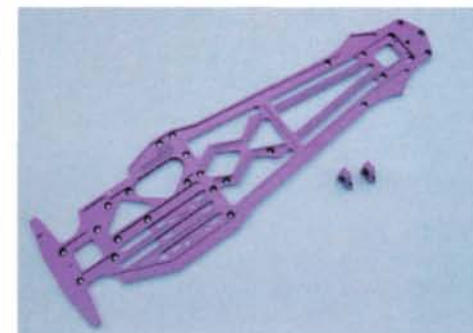
Speed Shop

Wolf Pack Radicals' Big-Block Conversion and Machined Chassis for the HPI Super Nitro RS4

How would you like to drop a big-block .15 or .21 into your Super Nitro RS4? Well, Wolf Pack Radicals* has a conversion kit that makes the engine swap an easy task. The Nitro RS4 Rear Exhaust Conversion Kit includes special engine mounts, a light-weight flywheel with cone washer and a fly-wheel wrench—everything you'll need except the engine, rear exhaust header and tuned pipe. The kit will also work on the 1/10-scale Nitro RS4, but it's not recommended (I'm sure you can imagine why).

The Super Nitro RS4 can be equipped with a .21 for drag racing, but it's not a practical engine choice for road racing. Heck, the average rear-exhaust .15 can easily push the Super Nitro RS4 well beyond its limits; however, expert drivers will be able to keep the car on the track, and they'll have a blast in the process. Because the conversion kit can turn your Super Nitro RS4 into a 70mph missile, Wolf Pack recommends the conversion kit for experienced racers only.

Check out Wolf Pack Radicals' machined-aluminum chassis for the Super Nitro RS4. It's a massive, 4mm-thick piece of aircraft-quality aluminum that has been artfully lightened and relieved to reduce weight yet remains extremely rigid. The large recesses ensure that the screw heads will never scrape on the track surface, and the chassis includes a complete set of fasteners to replace all of your car's old, scraped-up screws. The chassis is anodized bright purple; it looks fantastic mounted on the vehicle, it includes machined recesses for the drive belts and droop-adjustment screws, and its rear portion extends outward to form a rear bumper. The Wolf Pack chassis is heavier than the stock Super Nitro RS4 Chassis and HPI's optional Super Chassis, but it's stronger and more rigid; it's the perfect chassis to go with the Wolf Pack rear-exhaust conversion kit.



RS4 .15 and .21 rear-exhaust conversion kit—part no. WLF029; \$79.99.

Super Nitro RS4 countersunk chassis—WLF023P; \$99.99.

Machined-Aluminum Nitro Upgrades from HPI

Here are a couple of new goodies available exclusively through the "Buy HPI Online Store" on HPI's* website, www.hpiracing.com. The new Aluminum Brake Block for all HPI nitro cars is precision-machined and replaces the stock nylon brake block that supports the disc-brake assembly and center layshaft. The brake block adds stiffness and support to this vital area and enhances the car's appearance. HPI's Aluminum Gear Shaft Mount (not shown) is the perfect complement to the aluminum brake block because together, they provide superior bearing alignment and add greater stiffness to the chassis. The gear-shaft mount is also precision-machined and purple-anodized for awesome looks. Both parts come with all the necessary fasteners and instructions, and the parts fit beautifully on the chassis.

Aluminum Brake Block—72061; Aluminum Gear Shaft Mount—72068; \$28 each.



Andy's Tundra Nitro Truck Body, Sedan Twin Packs

Here's a spy shot of Andy's R/C Products* latest Tundra body for the Team Associated RC10GT and RC10GT RTR. As you can see, the body is sleek and tight-fitting and, in my opinion, it gives the truck a low-profile, slammed look. Sweet! The body fits the truck very tightly, the side panel is molded around the tuned pipe, and for superior cooling, the engine head sits flush with the truck bed. The Tundra will be available in lightweight .030-inch and rugged .040-inch-thick versions and will include window masks and decals. Expect to see an Andy's Tundra body for the Team Losi NXT in the near future as well.

Andy's will also soon be offering special Sedan Twin Packs that include two of its high-performance racing bodies with window masks and decals, all in one package. To give racers a broader choice of tuning options at a reduced cost, the 190mm Sedan Twin Pack will include a world-champion Stratus body and one of Andy's new Accord bodies.

The Stratus and Accord bodies look different from each other and have different handling traits. The Stratus reportedly has an even blend of front and rear downforce, with very neutral handling and lots of stability for large, high-speed tracks. The Accord has more front downforce to increase steering on tight, twisty tracks. Andy's will soon offer a 200mm Sedan Twin Pack for nitro touring-car racers as well. The bodies normally sell for \$19.99, so you'll be able to pick up a Big Mac, super-size fries and a soda with the money you save.

Tundra RC10GT body—3313 (.030 in.), 3314 (.040 in.); \$19.99 each.

190mm Sedan Twin Pack—3501; \$34.95.





Speed Shop

Pirate enters Competition Nitro Tourer scene

OFNA* surprised us with a sample of the Pirate Hyper 10—an all-out racing chassis that will soon be available (probably by the time you read this). The new car blends some familiar features (such as A-arm/upper wishbone suspension and a 3-belt drive train) with some interesting new ideas; most eye-catching are the graphite transmission plates, sealed radio box, dual-disc brake, and purple-anodized/silver-highlighted chassis.

The kit will be sold assembled without an engine, but a pipe and manifold will be included. Two sets of gears will be included for the 2-speed tranny (one set for racing, the other for maximum top-end speed) as will four pairs of rims and four pairs of belted tires—one set of OFNA's K1 soft-compound tires and a set of the harder G1 slicks.

OFNA did not have price info at press time, but promised the car will be competitively priced.



Right: the suspension parts are chunky and look as if they'll hold up well. The universal axle is just visible.



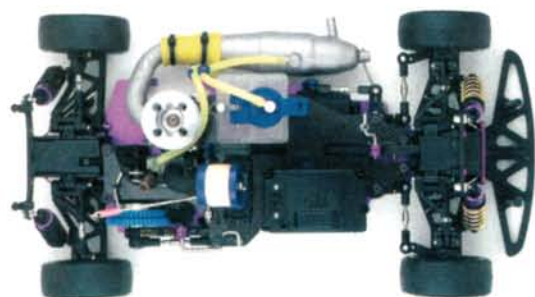
Left: the Hyper 10 will be 2-speed-equipped, and an optional "maximum speed" gear set will be included along with race-ready ratios. Note the fuel-tubing "spring" that supports the belt tensioner arm.



Right: a foam bumper will be included but was removed to show the front end detail. Note the front belt tensioner visible behind the shock tower.



The purple and silver chassis is fully countersunk and features down stops for the suspension arms. The cutaway behind the engine allows a pull-start engine to be fitted.



The receiver box makes the chassis look a bit chunky, but it adds little weight and is much easier to deal with than a vinyl receiver cover.



Left: graphite shock towers will be standard equipment, and sway-bars will also be included.

5 QUESTIONS

Age: 29

Last big win: 2000
 Hong Kong Nationals

Home track: So Cal
 Raceway, Huntington
 Beach, CA
First RC car:

Tamiya Frog

Sponsors: Trinity,

Yokomo, Novak,

 Associated, Pro-Line,
 Protoform, MiP and So
 Cal Raceway

**BARRY
BAKER**
 TEAM YOKOMO/TEAM TRINITY

RC Car Action: I've heard you describe your job as "traveling all over the country and around the world competing for bowling trophies with toy cars." What do you really say when people ask you what you do for a living? Barry Baker: If I don't know them well, I usually say that I do research and development for an electronics company. Once I get to know them, I'll tell them, "I race toy cars for bowling trophies!" After they've become educated about the [RC] industry, and they find out about the intensive training and traveling that I do, they usually laugh and ask me if I want to trade jobs with them.

RCCA: Do you still get butterflies when you walk up to the drivers' stand?

BB: All competitive racers get a case of the butterflies before a big race—especially if they've eaten the track food.

RCCA: Many unsponsored Expert class racers believe it's almost impossible to compete on the same level as sponsored drivers. Do you feel it would be feasible to offer a separate Expert class national championship for unsponsored racers?

BB: I think that offering different classes for unsponsored racers would have a positive effect on the hobby. These classes could include spec motors and spec tires with a limit on the number of sets that could be used at each event. I think classes like these would really help the hobby and encourage more people to race at large events.

RCCA: You race in 1/12- and 1/10-scale on-road, 4WD touring and 2WD and 4WD off-road. Do you think that competing in multiple racing classes gives you an edge over drivers who specialize in only one or two?

BB: Hey, you forgot 1/8-scale on-road, 1/10 fuel sedan, 1/8-scale on-road, soapbox derby, forklift racing and my favorite of all: the race to the dinner table! I just love to race; that's why I compete in so many classes.

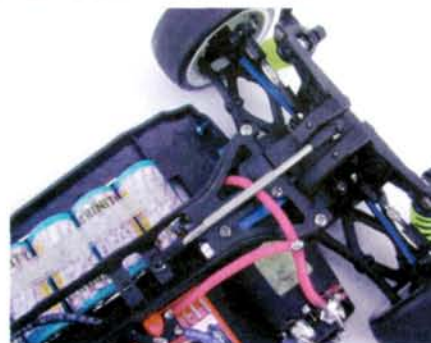
RCCA: Got any good rental car stories?

BB: I'm definitely going to have to take the Fifth on that question, but I can tell you a story about a couple of nameless racers who rented a car at an event and took it rally racing around a parking garage. The car bottomed out several times when going over the speed bumps at Mach speed and would case the parking blocks every single time. The car took such a beating that it was left in the parking lot in a puddle of multicolored fluids and reported stolen by the responsible racers who rented it. Of course, I could be making this story up ... if that isn't a disclaimer, I don't know what is!

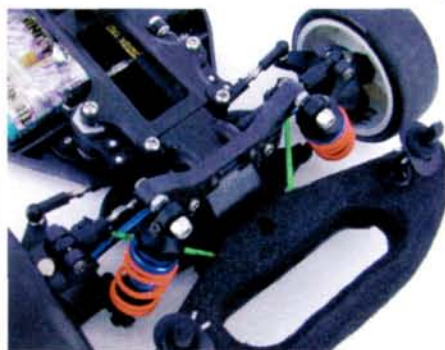
UNDER THE HOOD

BARRY'S YOKOMO MR-4TC PRO

Barry fabricated this adjustable belt tensioner. This device can potentially tweak the chassis, so the conversion is recommended only for expert drivers who have a tweak or setting board.



Barry also designed this custom front swaybar by using parts from his toolbox.



HIGH-BITE ASPHALT SETUP

	FRONT	REAR
Shock length	62.75mm	61mm
Preload spacers	Adjust to 5mm ride height	5mm ride height
Piston	No. 3	No. 2
Inner limiters	None	None
Spring	Orange	Orange
Oil	70WT	70WT
Shock end	Long	Short
Camber	-1 degree	-0.5 degree
Caster	Stock	NA
Toe in/out	0	Stock
Upper shock mount	No. 1	No. 3
Lower shock mount	No. 2	No. 2
Inner camber mount	No. 2	No. 5
Suspension-arm mount	No. 2	No. 2
Caster-block mount	No. 2	NA
Rear hub-carrier mount	NA	No. 3
Swaybars	None	None

MODIFICATIONS

- HPI Green front swaybar with custom mount.
- Custom front belt tensioner.
- Modified upper deck.

MISCELLANEOUS

BODY: Protoform Stratus
MOTOR: Trinity D4 10-turn double
BATTERIES: Trinity EX-Tech 3000 NiMH cells
SPEED CONTROL: Novak Cyclone
RADIO: Airtronics M8
RECEIVER: Novak XL
TIRES: Yokomo Sprint (firm compound with medium-compound molded inserts)
GEARING: 21/78
TRACTION ADDITIVE: Paragon Ground Effects

FACTORY OPTIONS

- Hardened one-way center shaft—part no. ZS-630H
- Hardened center pulley—ZM-674H
- Front one-way diff—ZS-540T
- Yellow tuned springs (2)—YS-1460.



HOT MOD HOW TO

STRENGTHEN YOUR LEXAN BODY

Lexan RC car bodies take a lot of abuse—especially when used primarily for competition. At about 20 bucks a pop, it's expensive—and time-consuming—to replace these bodies. There is a way to strengthen your car's body so it lasts much longer, however, and everything you'll need to do it can be found at your local hobby shop. Here's how.



My HPI Nitro RS4 is ready for some heavy competition. I reinforced the body using the methods shown below.

THINGS YOU'LL NEED

- DuraTrax® body repair tape—part no. DTXR1210.
- Shoe-Goo or Pacer® Zap-a-Dap-a-Goo II.
- Tamiya® reinforced tape—OP-351.
- Applicator brush.
- Scissors.
- Rags.



■ STEP 1. Cut sections of the nylon mesh repair tape and affix them to the areas of the body that you want to strengthen. The repair tape is slightly adhesive and will allow you to trial-fit it inside the body. On most touring-car bodies, the front wheel wells and front grill/bumper areas often need to be reinforced. The tail section and rear body-mounting hole(s) on most off-road racing trucks also get banged up and can use some strengthening.



■ STEP 2. When you're satisfied with the fit, remove the repair tape from the inside of the body and apply a light film of Shoe-Goo. Reapply the tape over the adhesive and spread it evenly. Work one section at a time and make sure that the tape conforms to the interior shape of the body. Have plenty of rags handy for this step because things are going to get sticky.

■ STEP 3. After you've finished one section, move on to the next, and so on until you're done. Inspect the finished reinforcement job to ensure that the tape has not shifted or separated from the body. Put the body aside and allow it to cure overnight.

■ STEP 4. If you have a nitro vehicle with a tuned pipe and a tight-fitting body, apply Tamiya aluminum reinforcing tape to the inside of the body where it comes close to or makes contact with the tuned pipe.



The tape's adhesive backing makes it easy to apply. If the body has minimal heat-sink-head clearance, you can also apply the tape to the inner section of the roofline. The tape is heat-proof and will protect the body from melting, but it can be used to reinforce the body as well. It's a more expensive reinforcing method, though.



LAST LAP

Should rally-car racing become a sanctioned class?

I love to watch full-scale rally racing on TV, and I think it would be great to have a ROAR rally car national championship. The track should feature both dirt and asphalt sections and maybe a gravel pit and some mild jumps to make tuning a nightmare. HPI, Yokomo, Tamiya and OFNA all offer great rally cars that can be raced in competition, so why not have a racing class to support these cars?

—Brad Hammond, La Canada, CA

I already compete in four racing classes, and although I like the rally-car-racing concept, I just don't think it will fly. There are already a dozen or more national championship titles every year, and attendance has been down at many of them. Offering one more national championship is going to bring those numbers down even lower, and that's not healthy for the hobby. Let's keep the rally cars for fun; why mess up a perfectly good thing?

—Jim Cristerna, Azusa, CA

No, if only because there's no clear definition of what a rally track would look like. Is it dirt? Grass? Half and half? I think you'd wind up having the rally cars run on existing off-road tracks. They might be OK on fast, flat tracks, but on the typical club track, I think the average touring-car-based rally car would be so out of control that clean racing would be impossible.

—Peter Dabb, Waterbury, CT

I love my HPI RS4 Rally and think it would be great to be able to race it in competition, but because I only compete at a club level, having a sanctioned racing class for rally-car racing isn't a concern for me. I honestly think that rally cars should be raced only on a club level. Every time a new racing class comes around, it becomes so competitive that all the fun is taken away. Look what happened to touring-car racing!

—Randy Expazio, Garden Grove, CA

Since Yokomo makes the best rally car, I say yes; create a sanctioned rally-car racing class. In my opinion, though, most people buy rally cars to have fun bombing around their backyards. Besides, there are already plenty of racing classes to compete in. But if ROAR does sanction a rally class, I'll be there with my MR-4 Rally!

—Barry Baker (Team Trinity/Team Yokomo factory driver)

NEXT MONTH'S QUESTION

Who's the best RC racer, and why?

Email your responses to
georg@gaiage.com.
Type "Last Lap" in the subject box.



by George M. Gonzalez

HPI CHALLENGE

WORLDS FINAL

RC racers invade American Honda

More than 250 RC racers invaded the Honda USA headquarters in Torrance, CA, to participate in what turned out to be the biggest HPI Challenge Race to date. Most of the 250 entrants had preregistered because of the event's immense popularity, leaving little room for sign-ups on race day. The Hobby Shack Blue Crew managed the event. These guys and gals in blue shirts made sure that everything ran smoothly and that everyone had a great time. To provide a professional racing environment, they brought their modular track system and AMB lap-counting computer.

In addition to covering the event, I competed in two classes! Wondering how the race went down and how well I did? Turn the page.

PHOTOS BY GEORGE M. GONZALEZ

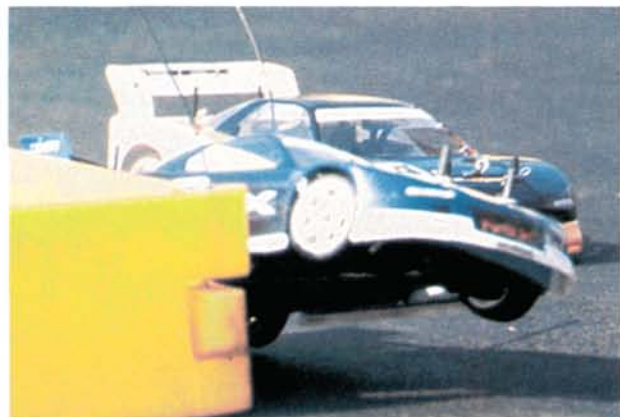


RS4 VERSATILITY

All six classes offered at the Challenge were well attended. The Electric RS4 Class (stock) had the lion's share of contestants, but the Nitro RS4 Open and Box Stock Nitro RS4 were also very popular. The RS4 mini races in both nitro and electric were really cool to watch because every car was required to run a Honda Civic body. There were even enough racers to fill two complete heats of Super Nitro RS4 cars—to many, the showcase event. Because HPI does not (yet) offer a Honda body for the larger super nitro cars, any HPI body was allowed. In this class only Corvettes, Alfa Romeos, Vipers and sleek Toyota GT1 cars fought it out for some big trophies.

HUNDREDS OF HONDAS

Because the event was held at the Honda USA facility, Honda Lexan bodies were required on every car that was entered; this



actually caused a shortage of HPI Honda bodies in Southern California! I competed in Nitro Open and Super Nitro and had a tough time finding a 200mm Honda NSX body for my Nitro RS4, and I wasn't the only one because there were many 200mm Nitro RS4's racing with 190mm Honda Accord bodies!

HPI's new Honda S2000 body was extremely popular in the Electric RS4 Class, but the venerable Honda Accord—one of HPI's best-selling bodies and a proven performer—was even more popular. But the Honda NSX in both 190 and 200mm widths was probably the most popular body shell. It's one of HPI's best-handling bodies and comes in versions for both electric and nitro vehicles. The Mini RS4s (electric and nitro) had to use Honda Civic bodies, and hobby shops sold out their stock of those in a hurry.

INTERNATIONAL APPEAL

The HPI Challenge is international: several races are held each year throughout Europe and Japan. Unfortunately, only three European champions—Marc Pfenninger, Alex Fernihough and Peter Sergeant—were able to attend the Challenge because of work and school commitments, and they did extremely well against the Yanks. Pfenninger won the RS4 Mini Electric with a box-stock car. Peter Sergeant carried on the box-stock theme with a win in the box-stock Nitro RS4 Class.

A PERSONAL DIARY

Day 1, round 1 of qualifying. I pitted with six racing buddies—most of whom work for Hobby Shack—and we combined two large Pop-Up tents to make a large, covered pit area. The weather couldn't have been better: clear blue skies and temperatures in the mid-70s welcomed us each day at the track. Most of my friends and I were signed up in multiple classes, so we were all pretty busy throughout the weekend. Because of the large turnout, practice time was limited: my first opportuni-



A view of the drivers' stand. The pit people are below the drivers.

ty to practice was during the first round of qualifying. My Nitro RS4 was set up for a high-traction surface, so it was slammed to the ground, and I was running swaybars at both ends of the car. I also had an HPI/NovaRossi C12 and a 2-speed tranny with some fairly tall gearing as well as HPI's latest hot-weather-compound tires.

My first experience on the track did not go well; the track was extremely technical and as slippery as a hockey rink; needless to say, my Nitro RS4 was not set up correctly, and a serious wrenching session was in order. Fortunately, my Super Nitro RS4 fared very well despite the wrong setup and I negotiated the course with a fair amount of precision. I relaxed a bit when I learned that my final heat time in the first qualifier had locked me into the Super Nitro A-main. Because of the large turnout, however, the race organizers decided that there was only enough daylight to complete two qualifying rounds (three were scheduled) to get through all the Mains. So I had to pull the proverbial rabbit out of my hat in the second round of qualifying in the Nitro Open Class.

Day 2, round 2. I wrenched on my Nitro RS4 an entire evening in an effort to get it to hook up on the extremely difficult track and basically turned my sedan into a rally car. I raised the ride height, ditched the swaybars and 2-speed tranny and set up, the suspension extremely soft. I also brought along several sets of HPI Super Radials and V-Groove tires because slicks were out of the question. Fortunately, my Super Nitro RS4 was dialed, so I prayed that it would continue to run well during the last round of



HPI webmaster Frank McKinney shows us the real Yokohama X-Pattern tire.

A NEW ERA of High Visibility Racing?

Because it was held outdoors on the most visible part of the parking lot, hundreds of spectators stopped for a glimpse of the action, and rubberneckers formed traffic jams along the nearby boulevards. Most of these people parked their cars and ran to see all the excitement. In my opinion, the throng of spectators underscored the overwhelming success of the HPI Challenge, and I'm certain that many went out and bought an RC car as a result of their visit. I only wish other race organizers would select high-visibility locations to help get the word out about RC racing.

CONCOURS CHALLENGE

As expected, the HPI Challenge Concours was extremely well attended: more than 100 cars lined up for judging. HPI judges David Kouche (HPI USA), Jason Dearden (HPI Europe) and Frank McKinney (HPI USA) had their hands full with the tough job of selecting the three cars that they felt had the most detail, the most realistic paint scheme and other concours features. They pondered nearly 15 minutes and then announced Ian Aquino from Rowland Heights, CA, as first-



The Electric RS4 Mini top three champions. European champ Marc Pfenninger smoked his competition by lapping the entire field.

place winner with his incredibly realistic Honda NSX. Second place went to Jamie Schoolcraft for his decked-out NSX that had a working alarm, radar with flashing lights and sound effects of a revving engine. Nester Rinonos picked up a third-place trophy for his expertly detailed Honda Civic. Winner Aquino was awarded a Super Nitro RS4 kit for his efforts and he took home a trophy! Congratulations!



The concours champions from left to right: Nester Rinonos (third), Ian Aquino (first) and Jamie Schoolcraft (second). Good job, guys! The other two gentlemen are Geoffrey Lockwood (right; American Honda) and Bruce Garfield (left; Honda North America).



The Electric RS4 Mini top three champions. European champ Marc Pfenninger smoked his competition by lapping the entire field.

qualifying and the Main.

The hours I spent wrenching on my Nitro RS4 paid off because the car was now more controllable. I still could not lay down the ponies because the track was so tight and slick, but I got around the course at a decent pace by just bleeping the throttle on and off. After a couple of practice runs and some more fine-tuning, I was ready for the second and final qualifier. After a good start, I was in second place and managed to hold my ground throughout most of the race. Unfortunately, an

over-eager back marker took me out as I was trying to make a clean pass, and that cost me several positions. Never have I heard so much profanity up on the drivers' stand, and never have I witnessed so much hacking during a race. I managed to keep my cool (and my mouth zipped up) and posted a 14-lap run to qualify in ninth place in the B-main.

Super Nitro was next, and I was first to leave the gate at the starting tone. At the very first corner, however, I was clipped by a Toyota GT1, and my car suddenly assumed the flanking position. So much for a great start! I didn't give up; but it took every bit of concentration just to get back into third place. This is where I finished, but I was unable to improve my final heat time established in the first round of qualifying the day before. I was very pleased that I was still an A-main qualifier, but I was smack in the middle of the starting grid because I qualified in sixth place.

The Finals spelled disaster for the G-Man; I ended with a fat DNS (did not start) in both classes entered. I almost missed the Nitro Open because I was too busy taking pictures to hear the starting announcement. My pit crew was ready on pit lane, but I was nowhere to be found. I made it to the drivers' stand just seconds before the 3-minute warm-up timer went off. I stared at my pit crew in disappointment as they frantically tried to start my car but could not crank the engine to life. The race started without me, and I



The Box Stock Nitro winners: European driver Peter Sergeant picked up the win and received a free Nitro RS4 2 for his efforts.

took that long and lonely walk down the drivers' stand. After the race, I placed my car on the starter box and it started on the first attempt—go figure!



The top three Super Nitro RS4 drivers say cheese! Orlando Sherman won a brand-new Super Nitro RS4, which he can use to replace all the worn parts on the car he raced at the Challenge.

PRIZES GALORE

The HPI Challenge is more than just a race: it's a way for the company to thank all of its loyal customers for their continued support. Although the event was not free, HPI more than paid back the participants by providing guaranteed sign-up prizes with every entry, such as Lexan bodies (which the racers actually could choose) and cool-looking HPI T-shirts. In addition, hundreds of prizes—complete tire sets, hop-ups, engine accessories and much more—were raffled off, and the winner from each racing class received a complete HPI RC car kit! This ensured that all participants got a big bag of goodies. A few lucky winners took home Yokohama pit jackets and a complete set of (full-scale) Yokohama tires donated by—you guessed it—Yokohama.



I was ready for the Super Nitro A-main—the first driver on the drivers' stand. My pit crew had no problems starting my Super Nitro RS4, and I had the entire track to myself and an opportunity to make a few practice laps before the start. Unfortunately, I didn't realize that the track had shifted: the lanes were moved inward, making the back "S" section extremely narrow. This was a result of all

the carnage in the previous race, and the track crew did not realize that the track had been remodeled. I sideswiped a board and ripped the entire rear suspension from the vehicle. Luck was not on my side that day, but I could still smile when it was over because several of my racing buddies did particularly well.

UNTIL NEXT YEAR

The HPI Challenge was successful on several levels. It was not only the largest Challenge race to date, but it was also one of the largest manufacturer-sponsored events of all time! It also attracted more spectators than most other races, so the organizers met their goal of a highly visible yet fun racing venue. We commend HPI's choice of Hobby Shack's Blue Crew to manage the event; it provided more time for HPI representatives to ensure that those who attended would leave with some great memories—and some great prizes!



The Radio Control Car Action racing team from left to right: Brad Hammond, Charles Pichardo, George Gonzalez, Tim Wolford, Angel C., and Adam C. We weren't the fastest guys, but a few of us made the A-main in some of the classes we entered. Look closely, and you can see my broken Super Nitro RS4 with the Alfa Romeo body.



HPI flew in the European HPI Challenge series champions to compete with the best HPI drivers in Southern California. From left to right: Peter Sergeant (England—Box Stock Nitro RS4), Alex Ferniough (England—Nitro RS4 Open) and Marc Pfenninger (Switzerland—Electric RS4 Mini).



The top three winners in Nitro Mini. Enough guys showed up at the Challenge to fill two heats.

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- Narrow rear end conversion-set (extra) quicker steering response
- Aluminium wheel-adaptor set front/rear, fixed (extra)
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 - Carbon shock support rear and ball-type shockmounting-set
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- 1999 ROAR National Champion

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Congratulations to all the HPI Challenge champions and a salute to all who helped make this event a reality. I hope to see you all next year. ■

Chris Yung picked up a brand-new Nitro RS4 2 kit for winning the Nitro RS4 Open.



race results

ELECTRIC RS4 MINI

- ① Marc Pfenninger
- ② Frank Killam
- ③ Torrance DeGuzman

ELECTRIC RS4 SEDAN

- ① Thad Garner
- ② Bill Martinez
- ③ Shawn Ireland

NITRO MINI

- ① Jamie Schoolcraft
- ② Nester Rinonos
- ③ Manny Lubong Jr.

BOX STOCK NITRO

- ① Peter Sergeant
- ② Daniel Trink
- ③ Mark Rebeck

NITRO OPEN

- ① Chris Yung
- ② Luis Wang
- ③ Daniel Trink

SUPER NITRO RS4

- ① Orlando Sherman
- ② Paul Gallardo
- ③ Frank McKinney

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- New design carbon radioplate with new battery position
- Lowered fuel tank position
- Radioplate bracket in aluminum
- New design 4mm chassisplate 7075 T6 alu
- Adjustable front anti-roll bar set
- New rear bodymount GTP design
- Lowered rear up-rights
- Rear shocktower in carbon with 2-shockpositions
- Ball-type shock-mounting
- Aluminium quick change levers (in 2WD only rear)
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- 1998-1999 IFMAR World Champions Group-C and Touringcar
- 1999 ROAR National Champion



NovoMega: SX-15 MS EV3,
#2603MS, #2605MS

SX-15 EV3
#2603, #2605

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MEGA**

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ROAR PAVED OVAL NATS

by Chuck Carter

The ROAR Paved Oval Nationals were held at one of the South's finest outdoor tracks: the Sugarbowl R/C Speedway in Sugar Hill, GA; 194 drivers gathered from all over North America to answer the racer's eternal question: who is the fastest?

Racers and track operators did a great job throughout: only one race wasn't started right on time, and there were no real surprises in tech, either. Jan and Shelley Bailey can be proud that they and their staff put on one heck of a good race!

Congratulations to all the champs.

Here's Dwight "Gimpy" Smith, your 1/12 Open Mod champ.

QUALIFYING

This took all Friday and started again early on Saturday morning, so all the drivers had two full days and four rounds to lay down their best attempts. The handout stock motor was the GM Pinnacle; although it isn't the most popular stock motor on the market, it's a very competent performer. Everyone seemed to get it running well, too, as all the stock classes set new track records.

THE MAINS

Sunday arrived and it was another "chamber of commerce"-type day in north Georgia. The temperature was up a little more than the previous days, but not enough to make you change your setup. The first of the triple A-mains would be on the line at high noon. The points system for the A-mains is the 10-point system: 10 for a win, 9 for second, etc.; then the lowest score of the three is dropped. It would require too

much space to detail the events of each Main, but I've included the finishing order and cumulative points for the A1 and A2 mains and provided all the action for the third (unless the second main decided it all).

■ **4-CELL STOCK. A1.** Rule (10 points), Daniels (9), Evans (8), Johnson (7), Davis (6), Bartholomew (5), Westmoreland (4), Jolley (3), Oswalt (2), King (1).
A2. Steve Rule again had his car running

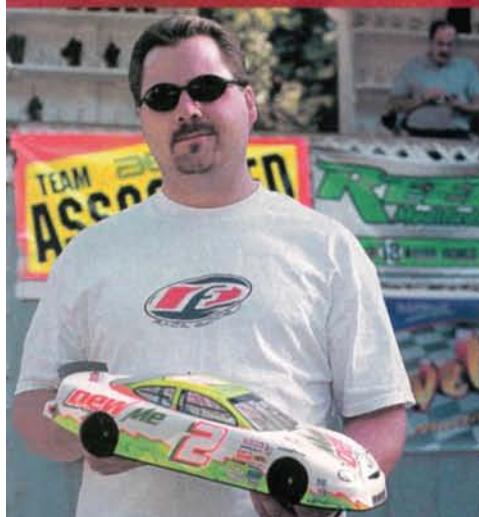
4-CELL $\frac{1}{10}$ SCALE

WAVE OF THE FUTURE?

Along with the four ROAR National classes (6-cell Stock and Modified, Stock NASTRUCK, and $\frac{1}{12}$ -scale, 4-cell Modified), Jan and Shelley Bailey, owners of the Sugarbowl, also ran their "bread and butter" class: 4-cell $\frac{1}{10}$ scale.

Every weekend, they run an all-4-cell format of $\frac{1}{10}$ scale Stock and Open Modified, and with the advent of the Chameleon, 19T 4 cell, the 4-cell classes turned out to have the largest fields in these Nationals.

Since the completion of the Nats, ROAR has replaced the NASTRUCK 6-cell stock class (which only had eight entrants in '99) with $\frac{1}{10}$ -scale 4-cell Stock. Good job, ROAR; the racers spoke and you listened by giving this class the national status it deserves.



Jeff Carparialata won the concours competition with this suggestive entry.



Left: Associated's Daryl Silva and his RC12L30.



BATTLE FOR THE BOWL



RECORD-BREAKING WEEKEND

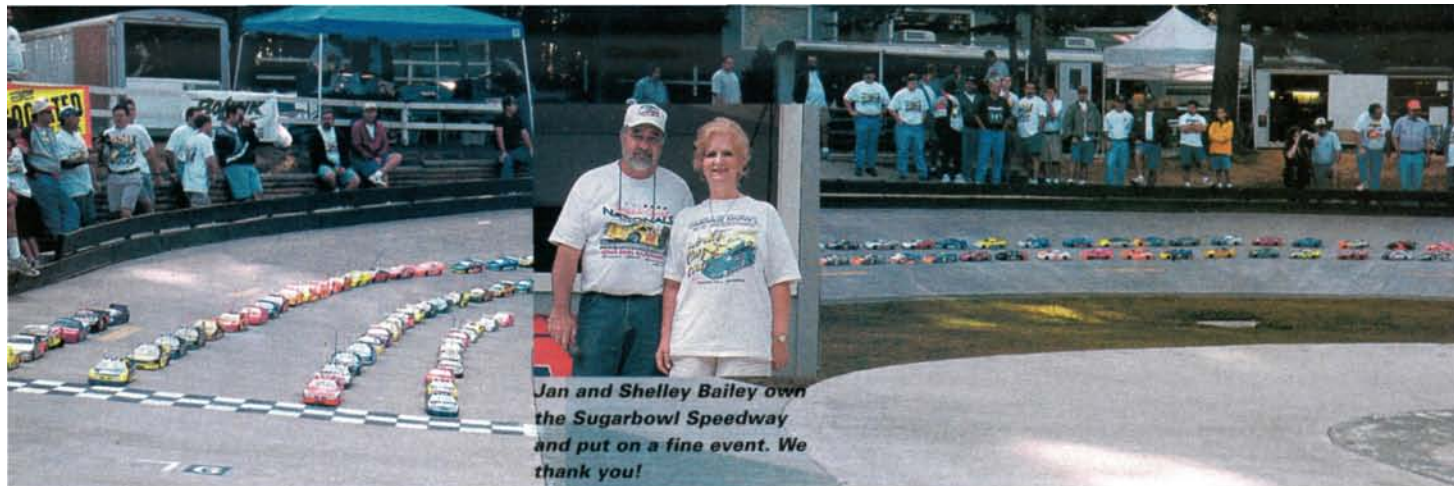
The GM Pinnacle handout motors performed excellently in the Stock classes. Every class in which the motors were run had new track records set; in fact, with the exception of the Truck class, Sugarbowl track records were set in every class. Make no mistake: this was one fast Nats!

the inside line, low down the back straight, inviting anyone to take the high line; Phillip Daniels was a very close second; Ray Johnson rebounded and came home third. When the buzzer rang, Steve brought his car across the line with the championship wrapped up. With 20 points, he couldn't be caught. Phillip Daniels (18), was still in the battle for second. Behind them were Ray Johnson (15), Todd Oswalt (9), Jason Westmoreland (10), Spud Davis

(11), Danny Bartholomew (9), John Jolley (6), Dickie King (3) and—having his throw-away round—Jimbo Evans (9).

A3. Although Steve Rule had wrapped up the number-one spot, another race had to be run. Ray Johnson laid down a really great run and set a new track record for the Sugarbowl's 4-cell Pro Stock by winning the race with a 40/4:00.58, which gave him 18 points—enough to claim second; Phillip Daniels was third.

■ **4-CELL OPEN MOD.** A1. Fryar (10), Bartholomew (9), Irish (8), Lipscomb (7), Hampton (6), Vines (5), Floyd (4), Colvin (3); Martin (2) and Tomas (1) were out early. A2. At the halfway point of the second A-main, Danny Bartholomew took the lead from Jeff Irish. Irish had nailed the start and he and Marc Fryar drove to what was the Nats' closest finish. With 3 minutes gone, Marc Fryar made his move, passed Irish and moved in on Bartholomew.



Jan and Shelley Bailey own the Sugarbowl Speedway and put on a fine event. We thank you!



Chris Ellefsen took home the "Chameleon class" win.

Fryar (20), running 46 laps in 4:00.62 and Jeff Irish (17), 0.22 second behind—virtually side by side. Tracy Lipscomb (15) was third, Tomas (8) improved in fourth, followed by early leader Bartholomew (15), Colvin (8), Jamey Martin (6), Floyd (7), Hampton (8), and Vines (6). With his win, Marc Fryar secured the 4-cell Open Mod championship.

A3. Fryar was number one, and like Rule, he did not run A3. It

was still close for the runner-up spot between Irish, Lipscomb and Bartholomew—only 2 points between them. Jeff Irish won the A3, giving him second; Tracy Lipscomb came in second, making him third in the championship.

■ **6-CELL STOCK.** A1. Brackett (10), McClellan (9), Moates (8), Salvas (7), Mader (6), Spicer (5), Hampton (4), Verbonitz (3), Danny King (2). Chad Archer (1) was out early.

A2. If third-place qualifier Stan Brackett could pull off another win, he would win the championship. Off the line at the start, it was Andy McClellan leading with Brackett on his tail and Jason Moates, Steve Salvas and George Verbonitz close behind. With 2½ minutes down, McClellan and Brackett were lapping traffic, and Stan decided to make his move. Using the lap car as a pick, he dove to pass Andy, they touched and Brackett caught the car before spinning or hitting the wall. He stayed with it and dogged Andy's rear bumper;



then, in a flash he passed and pulled away. But McClellan hadn't finished; for the last two laps, it was Brackett and McClellan, both driving clean and close. At the line, it was Brackett (20), followed by McClellan (18), 0.77 second behind. Jason Moates (16) had his second third-place finish; then it was Verbonitz (10), Salvas (13), Spicer (10), Hampton (8), Danny King (5) and Dave Mader (8). With 20 points, Stan Brackett claimed the 1999 ROAR Oval ¼-scale Stock National Championship, and his 47/4:04.20 race set another stock Sugarbowl track record.

A3. ¼-scale Stock Car ended with Stan Brackett as ROAR National Champion, Andy McClellan in second and Jason Moates in third.

■ **4-CELL 19-TURN ("CHAMELEON CLASS").** A1. Mike Boylan (10), Anderson (9), Chad Archer (8), Ernie Bucci (7), early front runner Broyles (6), Kellum (5), Scotty Maupin (4), Ellefsen (3), Ottinger (2).

A2. Chris Ellefsen (13), Mike Boylan (19), Kellum (13), Anderson (16), Bucci (13), Broyles (11), Archer (12), Maupin (7), Mike Ottinger (4).

A3. The hard luck story of the '99 Nats has to be Zac McDaniel's in 19-turn 4-cell. After setting a new track record to take the pole position, he came out of the third A with 3 points and didn't even make a complete lap in the triple A-main. If it wasn't one thing, it was another. I mean, when was the last time you had a motor spring fail? Zac did his best to cover his disappointment; he's a great competitor, and I

MATTHEW GREEN—YOUNGEST DRIVER

The youngest driver was 9-year-old Matthew Green from Charleston, SC. He was always in complete control of his car, and he captured the hearts of everyone who saw him drive in the C-main. He started ninth and by the 2-minute mark was knocking on the back door of leader Scott Bruggeman, a regular at the Sugarbowl, who has 30 years on young Matthew.

Going through the dogleg on the back straightaway, Matt made his move, cleanly passed the last of his competitors and drove on to the win. The spectators erupted in cheers as he crossed the line, two turns in front of the rest of the field.

All weekend, Matthew was seen talking to other drivers,

even having some of them autograph the shirt he was wearing that day. He proudly showed off the body that '98 champion Richie King had given him. As articulate as any driver twice his age, he told me how he had driven the Sugarbowl at the Labor Day warm-up race, had qualified second in the A-main and won his class. He held the 4-cell stock record at his home track, J&M Raceway in Charleston, SC. This kid is really into racing and is one of the brightest stars; the future of oval racing is alive in the form of Matthew Green.



ROAR OVAL NATIONALS

1/10 OPEN MOD								
DRIVER	CHASSIS	MOTOR	ESC	RADIO	BATTERIES	BODY	TYPE	TIRES
Chris Smith	Hyper	Velocity	Novak	Futaba	ProMatch	Bolink	'99 Pontiac	BSR
Greg Honeycutt	Racotech	MightyMotor	Novak	Futaba	ProMatch	Bolink	'99 Pontiac	BSR
Sean Cochran	Racotech	Velocity	LRP	JR R1	Velocity	Bolink	'99 Pontiac	Jaco
1/12 OPEN MOD								
Dwight Smith	Associated	Reedy	LRP	Futaba	Reedy Zappers	Protoform	Taurus	BSR
Todd Putnam	Racotech	Putnam Propulsion	GM	K O Propo	Xipp	Protoform	Thunderbird	BSR
4-CELL 19T								
Chris Ellefsen	Associated	Chameleon	Novak	JR	ProMatch	Bolink	'99 Pontiac	BSR
Mike Boylan	Trinity	Chameleon	Novak	Futaba	Trinity	Bolink	'99 Pontiac	BSR
Eric Anderson	Racotech	Chameleon	Novak	Airtronics	World Class	Protoform	HD Pontiac	BSR
4-CELL OPEN MOD								
Marc Fryar	Associated	Various	LRP	-	HotShot	Protoform	-	BSR
Jeff Irish	Racotech	Litespeed	Novak	Futaba	Litespeed	Bolink	Pontiac	BSR
Tracy Lipscomb	Hyperdrive	Velocity	Novak	KO Propo	Velocity	Bolink	'99 Pontiac	BSR
6-CELL STOCK								
Stan Brackett	Hyperdrive	Handout	Novak	Futaba	ProMatch	Protoform	'97 Pontiac	BSR
Andy McClellan	Racotech	Handout	Novak	Futaba	ProMatch	Bolink	'97 Pontiac	BSR
Jason Moates	Hyperdrive	Handout	Novak	Futaba	ProMatch	Bolink	'99 Pontiac	BSR
4-CELL STOCK								
Steve Rule	Racotech	Handout	Novak	JR	ProMatch	Bolink	'99 Pontiac	BSR
Ray Johnson	Racotech	Handout	Tekin	Futaba	-	Bolink	Pontiac	BSR
Phillip Daniels	Associated	Handout	Tekin	Futaba	TC Power	Bolink	'99 Pontiac	BSR
TRUCK								
John Grubb	Racotech	Handout	Novak	Airtronics	Perfect Match	Bolink	Ford F150	BSR
Bruce Triplett	Racotech	Handout	Novak	Futaba	BSR	Bolink	Chevy	BSR
Bill Weeks	Racotech	Handout	-	Futaba	Xipp	Bolink	Chevy	BSR

know he'll be back.

It was all still on the line for the 19T class, with Mike Boylan leading with 19, then Eric Anderson (17), and three drivers tied for third with 13—Chris Ellefsen, Bill Kellum and Ernie Bucci. With the previous races in this class on everyone's minds, we were all ready for a great race.

At the horn, Boylan was out front with Chris second, Eric Anderson third, and Scotty Maupin fourth—all running 5.16s. At the halfway point, Chris Ellefsen moved around Boylan to take the lead. It was the day's closest, cleanest race, and at the buzzer, Chris Ellefsen came across the line, winning again and setting a new track record of 46/4:02.94. That gave him the championship; Mike Boylan took second, Eric Anderson, third, and Chad Archer, fourth.

■ **1/12-SCALE OPEN MOD.** A1. Smith (10), Fryar (9), Silva (8), Putnam (7), Carapellatti (6), Jamey Martin (5), Thuresson (4), Schoeneman (3), Kimbrough (2), Triplett (1). A2. Triplett (11), Smith (19), Todd Putnam (15), Thuresson (11), Jamey Martin (11), Fryar (14), Carapellatti (10), Kimbrough (5), Schoeneman (5), Darryl Silva (9).

A3. It was down to Bruce Triplett, Todd Putnam and Dwight Smith in 1/12 scale; whoever won would be champion. Dwight Smith had the right formula, and led for the entire race, but Todd Putnam came on strong in the last minute. Putnam ran fast;

early on, he had a fast lap of 5.10, and at the 3½-minute mark, he was turning 0.25 second faster than the leader, Smith. At the buzzer, Dwight Smith was the 1999 ROAR 1/12-scale Open Mod National Champion. Todd Putnam came in second, and Bruce Triplett was third in the race but he ended up second in the points.

■ **NASTRUCK STOCK.** A1. Triplett (10), Grubb (9), Bob Roberts (8), Earl Myers (7), and Kevin Coulbourne (6). Fred Colbourne (5), Bill Weeks (4), Phil York (3).

A2. Grubb (19), Triplett (19), Bill Weeks (11), Phil York (11), Kevin Colbourne (12), Earl Meyers (12).

A3. Triplett had another chance with the NASTRUCKs; if he could beat John Grubb, he would repeat as champion. At the start, Grubb shot into the lead with Triplett hot on his tail. On the fateful 13th lap, Bruce's charge came to an end and Grubb was able to take the race and win the championship as well. Triplett was second, and Bill Weeks came in third.

■ **1/10-SCALE OPEN MOD.** A1. Smith (10), Honeycutt (9), Cochran (8), Richie King (7), Billy Moose (6), Mike Boylan (5), Roger Douglas (4), Gary Hamilton (3), John James (2), Chuck Baader (1).

A2. Greg Honeycutt (19), Richie King (16), Sean Cochran (16), Billy Moose (13), John James (8), Gary Hamilton (8), Smith (14),

Roger Douglas (7), Boylan (7), Chuck Baader (2).

A3. The last race. Any of the top five could take the championship with a win in A3 Open Mod. Chris Smith took off into the lead followed by Greg Honeycutt, who tangled with Chuck Baader on the second lap, and there were two cars in the infield. Chris had his Hyperdrive haulin' and was being chased by the G-Force of Sean Cochran with Richie King and Billy Moose not far behind. With 1 minute to go, Sean really started to pull the trigger and reeled in Chris. Sean came by Chris with less than 10 seconds to go. They finished about a foot apart with Sean in the number-one spot. Chris Smith was second followed by Richie King, John James, Mike Boylan, Roger Douglas, Billy Moose—after he had slowed with seconds to go; Gary Hamilton, Greg Honeycutt and Chuck Baader were out early.

When the points were figured out and low scores dropped, Chris Smith and Greg Honeycutt were tied with 19 points. So then they reverted to the highest score dropped, and that gave Chris Smith the 1/10-scale Open Mod ROAR National Championship. Greg Honeycutt was second, and Sean Cochran came home in third with 18 points. ■

TRAXXAS Sprinter

The Eagle goes oval

by Paul Conrad

Almost every RC fanatic has an old vehicle lying around doing nothing but collecting dust. A good friend of mine, Glenn "Fluffy" Oswald, has many such machines. For the sprint car showcased here, Glenn revived a retired, 2WD Traxxas* Blue Eagle race truck from the early '90s. Although no longer state of the art for conventional off-road racing, the sprint-spec version really rips on the dirt oval at Xtreme RC in New Milford, CT. I oughta know; it's my track!





The roll cage is made of brass tube; check out the small throttle-cable holders that are soldered to it. They allow the wing's height to be finely adjusted and make for quick wing removal.



Weight RTR: 65 oz. (1,843g)

Length overall: 17.5 in. (444mm)

Width overall: 11.375 in. (289mm)

Motor: Trinity* GT-1

ESC: Novak* T-4

Radio: Futaba* Magnum Sport

Servo: Futaba S132H

Battery: Racer's Edge* 2000

Chassis: Traxxas Blue Eagle

Most difficult step: building the roll cage. Getting the threaded collars to line up properly with the wing was hard, but with patience, I was able to pull it off.

Total value: the car's parts cost about \$200; taking my time into consideration probably brings its worth to around \$500.

Time to build: two to three weeks from start to finish.

Next project: a scaled-down racing tractor. It will have a Parma chassis, working lights and detailed dashboard, and its steering wheel will rotate in response to front-wheel steering.

CHASSIS

The first step in the operation was to take the vehicle down to a bare chassis and prepare it for painting. After it had been cleaned with isopropyl alcohol to remove grease and grime, the chassis was ready for a few coats of Black Baron* yellow epoxy paint. That took care of the main chassis plate, but there's more to a sprinter than a slab of aluminum. A roll cage, bumpers, and nerf bars had to be constructed. Glenn cut, bent and soldered the parts together using sections of K&S* brass tube. He drilled holes in all the joints, installed pins for extra support and used silver solder throughout.

Louvered-aluminum side plates add to the look and are off-the-shelf parts from Big Boy Toys*, as is the rear bumper. The tubular parts and side plates are bolted to the chassis with 4-40 screws.

SUSPENSION

As a race truck, the Blue Eagle came equipped with tall shock towers to accommodate long-travel shocks. This setup provided much more travel than the project required, so Glenn had to make a few mods.

He removed a full inch from the lower half of the rear tower and drilled new mounting holes to attach the tower to the front of the gearbox. Then he added a custom-made graphite upper camber-link support/rear bumper brace to the front of the stock gearbox. Using the stock mounting hardware, he bolted short versions of Kyosho's now-defunct Platinum shocks to the shock tower. (Historical note: the Plats were the first shocks to feature externally adjustable damping, and they used a system very similar to that now offered by Progressive Suspension.)

There was no need to shorten the stock front shock tower, but Glenn did drill 4/40 holes lower in the shock tower to accommodate the short Kyosho* Platinum shocks.

Some other original Blue Eagle components were overkill in sprint-car mode. The truck's long suspension arms made the car's track too wide. Solving this problem was easy: by using Traxxas buggy arms,

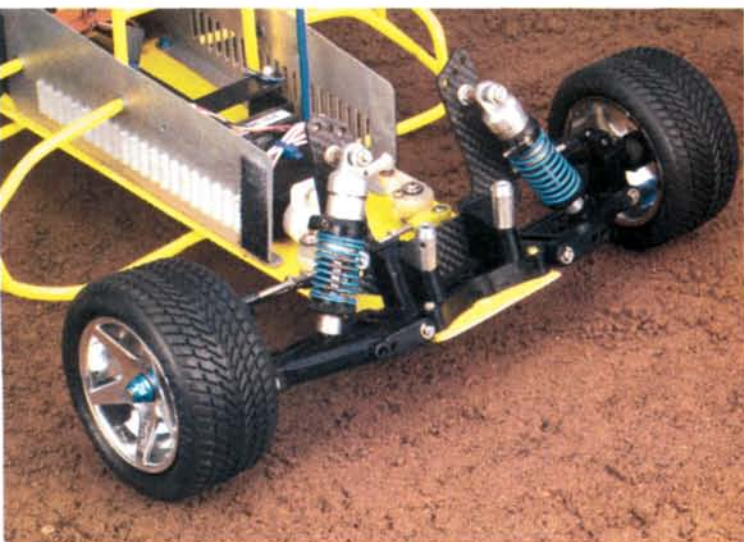
Lunsford* short titanium rods, stock hubs and front spindles, Glenn found that he had the perfect width for dirt-oval racing.

BODY

Glenn chose a Big Boys Toys sprint-car body because of its detail and realism. He painted it with Pactra* Candy Blue, black, silver and orange. The upper wing is from Associated*, but Glenn made the nose wing himself using Bolink* 0.030 Lexan. He painted both wings with Pactra paints to match the body and mounted them on the roll cage using BRP* wing buttons and piano wire fitted into Du-Bro* throttle-cable holders. He then soldered the holders to the top of the roll cage, allowing the wing to be removed easily by loosening a few setscrews.

WHEELS AND TIRES

HPI* chrome, 5-spoke, truck wheels fitted with Pro-Line* 2.2 Road Hawgs complete the rear of the car, while the front has a



Left: the front shocks are old Kyosho Platinum units. They're shorter than stock, so Glenn had to drill new holes in the shock tower to accommodate them. Bud's wing mounts hold the front wing in place. Below: the brass-tube nerf bars are attached to the aluminum side panels using 4-40 screws.*



Above: here's the business end of the car. The rear bumper and side louvers from Big Boy Toys help to make the car look like the real thing, and a Trinity GT-1 motor really whips it around the track.





matching set of rims and rubber in buggy size. This setup gives the machine the right balance of traction for sideways oval action.

GETTING SIDEWAYS

Glenn's sprinter is impressive enough on the shelf, but I just had to drive it. After installing a fully charged 2000mAh pack in the stock battery holder, I took the car for some hot laps on the dirt oval. If you

think four-wheel drift is fun with a touring car, you've got to try driving a sprinter! Glenn's machine will hang its tail out all the way around the track, and it's a fast ride. Turning left doesn't get any more fun than this. Great job, Fluff.

**Addresses are listed alphabetically in the Index of Manufacturers on page 216. ■*

7 Steps to a Fast Finish

From clear to colorful in one hour by Peter Vieira



Here's a Protoform Monte Carlo with a two-color-and-tape job. I left a gap between the blue and the white tape to create an orange stripe in between.

It's Saturday night, and you couldn't be more ready to hit the track in the morning. Your car is rebuilt with fresh diff balls and new shock seals. Your motor's comm is perfectly trued, and there's a backup motor in the pit bag. Heck, you've even cleaned the dust off your radio and put fresh alligator clips on your charger. Now all you need to do is find your car's body. Uh-oh! You threw that body away after last weekend's race when the cracks in the fender wells finally met in the middle of the hood. Now what? Don't worry; you can still make it to the race without resorting to the one-coat-of-white look. Follow these steps, and you can hit the track in a hurry and still look good on the grid!

Before you buy a body

Precut window masks and well-stocked decal sheets are always a plus, but they're an even bigger bonus when you need to complete a body in a short time. All Pro-Line* and Protoform* shells include masks and decal sheets; so do HPI* bodies and some other brands. Check before you buy.

YOU'LL NEED

- Denatured or isopropyl alcohol.
- Masking tape (if you have a choice, use 3M or Duck brand tape).
- A hobby knife and a few fresh blades.
- A hairdryer.
- Pactra* pinstriping tape.
- Pactra Racing Finish spray paints (use spray cans to save time; if you're air-brushing at home, try Parma Faskolor paints).
- Body-trimming scissors.
- Olfa circle cutter (not required, but highly recommended).
- Paper towels.



Step 1: Prepare the body.

Place the body over the chassis and mark the body-post locations, then clean the inside of the body. If you're painting at the track, you probably won't have the luxury of a big kitchen sink, dishwashing liquid and fluffy towels for the usual pre-painting body scrub. Instead, wipe out the inside of the body with a towel dampened with denatured alcohol.

TIP If your car body doesn't have molded-in wheel wells, mark their location now while the body is clear, and mask a "window" in the wheel well so you can find the center of the wheel when the body is mounted.

This Honda S 2000 shell from HPI is a perfect quick-paint job candidate; it includes window masks, an ample decal sheet and factory-applied overspray film. Add a couple of stripes using masking tape, and you're ready to spray in less than 5 minutes.

Step 2: Choose your colors.

The simplest way to complete a multi-color paint job is to make certain the backing coat for the first color can be used as a color coat as well. For example, if you choose Pactra Sprint White and Blue Streak for your body, you can spray the blue sections first, then use the white paint to back the blue and, simultaneously, fill in the white areas.

TIP Avoid "thin" paints such as candy, metallic and fluorescent colors; they require more coats than do solid colors.

Step 3: Apply the masking.

Apply the included window masks, then plan your paint scheme. Since we're looking for a fast finish, avoid complicated designs that require graphics to mold around complex curves. Bold stripes along the engine hood, roof and doors are the best bet.



Step 4: Paint!

Apply the darker color first. Although it's very tempting to blast a thick coat of paint onto the shell, spray a thin coat first, then hit it with a hairdryer, and apply another coat. It's much faster to spray two thin coats and set each with a hairdryer than it is to spray one sloppy coat and wait for it to dry. Once you've got good coverage, let the body sit for about 15 minutes before you remove any masking. Peel off the tape too soon, and you risk lifting up the paint along its edge.

Hobbico* offers overspray film with pre-applied tape on a roll. You can also use plastic food wrap, but it's a pain to put on.

After removing the masking for the lighter color, wipe off any tape residue with denatured alcohol and apply the lighter color.

TIP If you can spare the time, trace the outline of the window molding with your hobby knife and remove the masking in that area, then spray on a coat of black paint for perfect painted-on molding. Just be sure the color coats are opaque enough around the windows to prevent the black from showing through.

Looks crummy, doesn't it? The magic of striping tape will bring this body to life. Note that I masked the wheel wells so I could mark the centers of the wheels.



Step 5: Apply pinstriping tape.

Here's where your body goes from so-so to, "Wow, that really looks good." Use Pactra pinstriping tape to highlight the border between the two colors you chose for your car. Select a tape that contrasts with the



The bleed-through seen here is caused by the rough edge of the masking tape. To prevent this, trim the tape with a hobby knife; the cut edge will mask perfectly. Since I was trying to paint for speed and knew the edge would be covered by tape, I just slapped on the tape "raw."

paint: red with blue, orange with purple, etc. The pinstriping will make the colors "pop" and, because it covers ragged edges between colors, the tape gives a crisp look to the car.

TIP If the pinstripes are going to cut across the grill, headlights, taillights, or other decals; apply those decals first, apply the tape right over them, then trim the tape from the decals with your hobby knife.



For the cleanest look, place all the decals on the body first; then trim the tape to butt against the decals. If you put the decals over the tape, they'll look lumpy.

Step 6: Cut and mount the body.

Trim the body with body-trimming scissors, but leave the wheel wells uncut. Once you have the body's ride height where you want it, mark the centers of the wheels on the body. Use an Olfa circle cutter to trim the wheel wells. Once you try the Olfa tool, you'll never cut another wheel well with scissors (except on a Jeep!).

TIP Instead of body scissors, use your hobby knife and a straight-edge to trim the rocker panels for a wiggle-free cut.

Step 7: Mount the wing.

Cut out the wing and drill mounting holes through the provided dimples, but don't drill holes in the body's wing posts yet. First, line up one side of the wing with its post, then drill through the wing into the post and thread in the mounting screw. With one side of the wing firmly bolted in place, line up the other side and repeat the procedure. This will keep you from ending up with a skewed or bowed wing.

TIP Take the easy way out and mount a Protoform molded wing—no cutting required!

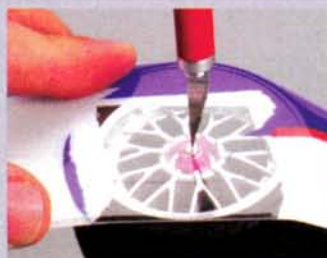


Whoa! Lookin' good now! Never under-

estimate the power of decals and striping tape. With the exception of the RPM* decal (which came with the Avenger wheels seen here), Protoform includes all the decals on the car. The molded rear wing is not included, but is highly recommended (it's a real time saver).

Tools of the trade

Here's what I use to trim and mount bodies. The Olfa circle cutter is a must-have for wheel wells. The Take-Off ream is small, sharp and includes a case (not shown). I like the Excel knife because it has a grippy handle and a cap to protect the blade (and my fingers).



Wheel-well trimming doesn't get any easier. Mark the center of the wheel, spin the circle cutter around the well, then peel out the Lexan. Perfect!

Whew! If you get to the track early, you should still have time to get some practice in before the first set of quals goes off. No matter how well you do, at least you'll be looking good!

*Addresses are listed alphabetically in the Index of Manufacturers on page 216. ■

How to prepare and paint ABS plastic bodies

Vacuum-formed Lexan bodies set the standard for light weight and durability, but when it comes to fine detail, they simply can't match the precision of injection-molded ABS or styrene bodies such as those like the Clod Buster's, Juggernaut's and some other Tamiya's kits. Unfortunately, if you spray a thick coat of enamel paint onto the body, it's all too easy to cover up those intricate details, and since the body is painted on the outside, any gloss you achieve depends on your finishing skill—not on a crystal-clear Lexan shell.

Luckily, achieving a show-car finish with spray enamels isn't rocket science. With some patience and just a little skill, anyone can make a hard body look incredibly realistic and with a shine that looks like wet paint.

In two installments, I will cover all of the steps required to give your body a showroom shine.



With a little time and effort, you can make a "hard" body that looks this good. Everything you need to know is right here.

BODY PREP

1 To paint the body parts properly, you must remove them from the parts tree. An easy way to do this is to take a sharp knife and score where the plastic tree meets the part. Then simply bend the part away from the scored

line, and the part will break off easily. Don't throw away the parts tree; you will need it later.

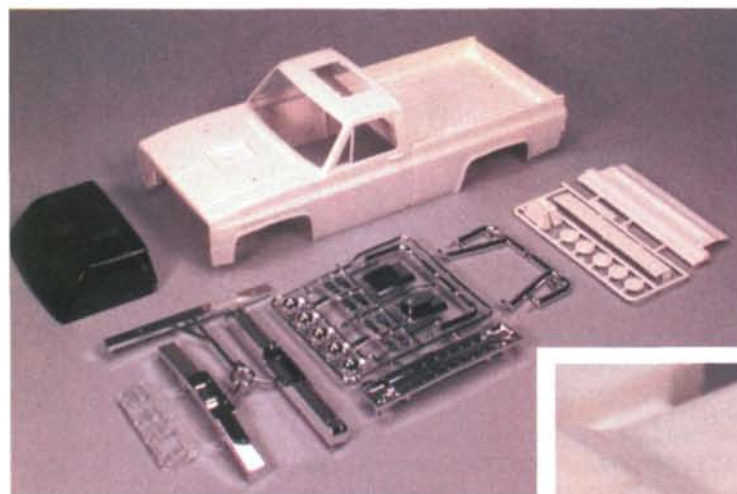
2 Use a hobby knife or some 250-grit sandpaper to smooth the plastic where you scored it. If you remove too much, you'll be able to fix the spots with body filler later. I think it's better to

remove a little too much plastic because it's easier to fill a low spot with filler and then sand it down than it is to sand out a high spot.

3 Use a fine Scotch-Brite pad or fine-grit sandpaper to lightly scuff the body's outer surface and give the primer and the filler something to stick to.

4 Having roughened the body parts, wash them all with soap and water to remove any mold-release agent that was used during the parts' manufacturing. Mold-release residue will prevent the primer and filler from adhering properly to the plastic.

5 Give the body a quick look over for imperfections such as mold lines that are left where the halves of the mold met when the body was being formed. Remove these lines by lightly sanding with 250-grit sandpaper, or scrape them away with a sharp X-Acto knife. Without these lines, the body will look much cleaner. I also



Above: the body fresh out of the box; as you can see, a lot of parts are used to make up one body. Molded bodies aren't always perfect; they sometimes need a little "tweaking" before they can be painted. Remove little nubs (right) and "flashing" (above right) with a knife or Dremel® Moto-tool. The small divot created by the grinding stone can be filled later.



SHOP TALK

These are just two of the many emails and letters I've received about the "official 4x4 Clod Buster" (February '00 issue).

Kevin, I'm wondering about the Clod you built for your new column. Which parts did you use?—wheels, tires, transmission case, battery, servo, etc.; and would you please give me the phone number or address of Motion Graphics? I'm building a Clod for myself. [email] Alex Berardi

I read February's "4x4" and couldn't help but notice those axles. Are they aluminum? I am building a custom Clod, and I haven't bought a kit (to get axles) yet because I have been looking for aftermarket axles. Which axles did you use and where can I get some? [email] Ryan Goitia

Well, guys, here's what I used to build this truck.

- Boca Bearing Clod Buster bearing kit—part no. 55-65US.
- ESP Clodzilla IV chassis—ESP048.
- Hitec HS-615MG servos.
- HPI Super shock set—A735.
- JPS Machined gearbox. Axle tubes with steering. Aluminum rims and servo-savers.
- LRP F1 Pro speed control
- Paint job by Motion Graphics, 2645 Robert Arthur Rd., Westminster, MD 21157; (410) 848-0008.
- Pro-Line Chevy Silverado body—3088-00. Giant Trac tires—1056-00.
- Trinity D3.5 16-turn single motors.

If you have any problems or questions about trucks, or if there is something you would like to see in "4x4," email me at kevinh@airage.com or send your letters to:

"4x4"
RC Car Action
100 East Ridge
Ridgefield, CT 06877-4606 USA

Right: Bondo Glazing and Spot Putty does a great job of fixing the body's rough spots, and you'll find it in most automotive-parts stores. Bottom: as filler dries, it shrinks; apply it in thin coats to prevent it from cracking. This divot has been filled and sanded smooth, but you can see that it still needs more filler.



like to lightly sand the body's edges with 600-grit sandpaper to remove any flash or sharp edges.

6 Fill any low spots or scratches in the body with some type of body filler. I like to use Bondo spot putty filler for this; it dries quickly and is easy to sand. You can apply the filler using anything that's flat and somewhat rigid—an old credit card, a plastic spreader used for full-size cars, or a small piece of sheet metal. For small areas, use an old X-Acto knife blade or your finger.



When you spread the filler on the

body, don't worry about how it looks. You'll sand it level later. Apply the filler in thin coats to avoid its cracking; as it dries, it will shrink, so deep scratches and holes may require more than one coat to do the job. Allow the filler to dry for at least a couple of hours before you sand it.

7 When the filler has dried completely, sand it lightly to level it out. I like to dry-sand with 250-grit sandpaper and then smooth it more by wet-sanding it with 600-grit. Wet-sanding

involves wetting wet-or-dry sandpaper before using it to sand. The water helps to remove the material being sanded off, and it prevents the paper from getting clogged with filler. Just sand the filler down until it's perfectly level with the surrounding area. Run a finger lightly over the area to check that everything is OK.

HOLD EVERYTHING!

Don't just lay the plastic parts on newspaper to paint them, as the paper will stick to them. Paint the main section of the body while it's sitting on a flat surface, but raise it slightly so that you'll be able to cover the bottom with primer or



ESC cooling fan from ESP

A pair of hot modified motors can heat up just about any ESC. To help keep your truck running cool, ESP now offers this deluxe ESC cooling fan. Such fans are nothing new, but this one is different. It's mounted on an aluminum plate with screws and spacers. It even includes a small guard to prevent wires and fingers from interfering with its operation. The ESC is mounted on the plate under the fan with double-sided tape, then the

assembly is easily taped to your chassis. The fan is powered by the battery that powers your truck and is sold fully assembled and ready for installation (part no. ESP4000).



The fan unit can be installed in a snap. Here, it's mounted in my Clod. Once it has been installed, connect the two power wires to the battery plug, and your motor will run cool.

This well-made, beefy cooling fan even has a small guard to protect its fins.

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4x4

paint. Prop it up on a pair of extra spray cans. I also like to place a body I'm working on on a small turntable (found in most discount stores) so I can easily paint all the sides. Alternatively, hang it up using a piece of wire.

To hold small pieces while you paint them, cut 2-inch pieces off the parts tree and attach them to the part you are painting with a small dab of hot glue. If the part has a hole in it, you can whittle down an end of the parts tree until it can be press-fit into the part. You could also use a small wooden dowel, toothpicks, etc.; once you've attached a "handle" to a part, you can use any small clamping device to hold it for painting. Just be aware that your clamp will get painted, too!



A high-quality finish starts with a clean body. Dish soap and warm water are all you need.

SET UP YOUR PAINTING AREA

The area in which you paint should be warm, dry, clean, well lit and well ventilated. Before you set up the body for painting, fill a small spray bottle with water and lightly mist the area to help keep the dust down. Be sure to cover anything that you don't want to get paint on. Overspray can travel to some strange places!

PRIME IT

It's now time to prime the body. I like to use DupliColor

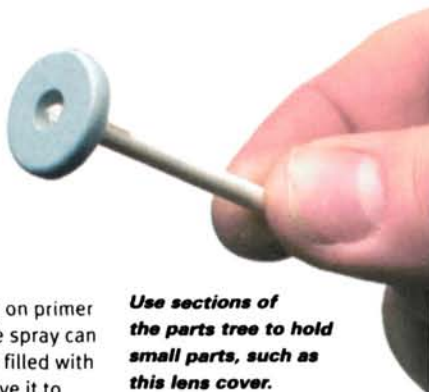
Scratch Filler primer because it sprays well and dries fast, and it will fill any small scratches that you may have missed.

1 Before spraying on primer or paint, put the spray can in a small container filled with warm water and leave it to warm up. The primer or paint will spray more evenly than if it was cold.

2 To check whether the primer will attack your plastic body, test it on a spare piece or on a body section that won't eventually be visible. If everything is OK, apply two coats of primer, allowing time between coats for it to

dry. If your primer does harm the plastic, switch to another brand. Allow the body to dry overnight; some types of primer will require more time to dry.

3 When the primer has dried fully, take a good look at the body to see if you can find any imperfections. The filler might not be per-



Use sections of the parts tree to hold small parts, such as this lens cover.

4 After the primed body has had a day or two to dry, lightly wet-sand its surface with 600-grit sandpaper to smooth the finish. Be sure not to sand too much, or you'll risk sanding through the primer. Also, when you're sanding, avoid the edges because the paint is very thin in these areas. Now wash the body again and allow it to dry.

PAINTING TIPS

- Always wash a body before applying primer or paint to ensure that they will stick well.
- Wash your hands often to prevent skin oils from causing problems with the paint. I always wash my hands before I handle a body I'm working on.
- Don't rush things. If you're wondering whether the paint is dry yet—it isn't!



Here's the body—primed and ready for paint. With a little more time, this baby will really shine!

fectly smooth, or you might have missed a scratch. If this is the case, depending on the problem, sand or fill until these areas are to your liking. If you had to fix imperfections, wash the body again, let it dry and spray on one more coat of primer.

We'll take a break from painting next month, but in July's 4x4, I'll take on spraying the color and polishing for a mirror-like shine.

The addresses of the companies mentioned in this column are listed alphabetically in the Index of Manufacturers on page 216. ■

You've got questions: pipes, ignitions, gasoline, nitro, jerks, cool guys? I've got answers.

Here are a couple that should help many of you; and remember, there are no dumb questions, so keep 'em coming.

Q Let me start by saying that I don't have a car, and I probably will not be able to afford one for quite a while.

you recommend for it? If you buy one pipe for racing and then buy a CVEC pipe for playing around, will it hurt the motor?
Todd Henke

good choice for a first car. Don't get me wrong; it's a fantastic car, but it's very sophisticated and complex. You have things a bit backwards: you should get a simpler car and a super reliable engine, such as an O.S. or Thunder Tiger. If you want to get your feet wet in 1/8-scale off-road, you might want to think

about something like a DuraTrax Axis.

You can have that car on the track in an hour and will be spared the expense of a starter box, since the engine is a pull-start.

Kyosho's MP6

Sports is also worth a look.

Any good conventional tuned pipe or muffler system *will not* hurt your engine!

A too lean needle-valve setting or a

restrictive stock muffler can both cause excessive heat and internal engine damage. The pipes that are available mainly help you obtain peak performance in various rpm ranges. A longer

pipe gives more midrange "punch" for good acceleration in short straights and out of turns, whereas a shorter pipe gives better top-end performance. Think of higher rpm as higher musical notes, and lower rpm as lower musical notes. Then think of a tuned system being like a trombone. The shorter you pull in the slide, the higher the note, and vice versa. Any good tuned pipes/muffler system will make your engine more powerful *and* make it run cooler than those restrictive expansion-chamber mufflers and long extension tubes that come with some—not all—kits. On the other hand, a tuned system that comes with some nitro kits, such as Associated's RC-10 GT, represents a good balance between mid-range punch and top end; it gives good balanced performance. Look for a pipe similar to this. As for the CVEC, I wouldn't recommend it for the beginner either. It just adds another adjustment you have to worry about. Stick with a conventional pipe for now, with a track record and reliability that is time proven. CC

But I still have a couple of questions for you. I want my first car to be a Mugen MBX-4, and I wonder what you think of putting an OFNA Force Delta 21 P8 engine in it? Also, which tuned pipe would

A Before we get into the will-the-wrong-pipe-hurt-my-engine thing (a good question), let me suggest something first. A car such as the Mugen MBX is not a

Q Will the Compagnucci MAC7 motor fit in the Traxxas T-Maxx or DuraTrax Axis? I tried to get on the Compagnucci website, but it was in Italian, and I only speak English (slight problem!). I want to do some modifications to fit the MAC6—just a few. I also want to know where I could buy one and how much it costs. Also, I was thinking about buying a new nitro-powered RC car—perhaps the Traxxas T-Maxx—and your article really made me want to buy one. Then the next issue came out, and the DuraTrax Axis looks really fun, and I also like the buggy look. Which one would you choose? I need durability, good speed and good ground clearance.

Thanks for all your help. I love your magazine.
Phillip Christiansen

A Really glad you like the mag. The Compagnucci MAC7 has different mounts than the MAC6, which is the engine that comes with the Compagnucci car. The MAC6's mounting bolts fit directly into the

bottom of the engine's crankcase, while the MAC7 has more conventional mounting flanges on the sides of the crankcase. My friends in Italy tell me that this engine is designed to fit into the spot where a glow .21 would fit. I don't know for sure because I've never owned a MAC7. The people at MRC have not yet decided

whether they will import the MAC7 engine. If MRC does decide to do it, I'll be able to clear up the question of fit once and for all. The MAC7 has a bit more displacement than the MAC6 and, therefore, a bit more horsepower. I agree; putting this engine into an 1/8-scale buggy or truck would be a very cool project.

As for the DuraTrax Axis and the Traxxas T-Maxx, although they do seem to compete for the same buyers, comparing the two would be like comparing apples and oranges. The question, "Should I get a 4WD truck or buggy?" is one only you can answer, Phil. It's your money and your ultimate decision. Both vehicles are cool. CC



Kyosho Snakebite QRC

by Kevin Hetmanski

Kyosho* has added another vehicle to the QRC garage in the form of the popular Snakebite monster truck. The body is all new, but the chassis underneath is standard QRC stuff with the usual features. An aluminum chassis dissipates heat from the engine, and a sealed radio box keeps the receiver clean and dry. Full-time, shaft-driven 4WD helps the truck plow through rough terrain. If you really get into trouble, the truck's namesake Quick Reverse Clutch transmission is easily shifted into reverse without the need for a 3-channel radio. Kyosho's own GS-11X engine provides the horsepower, and its one-needle carburetor is easy to tune and perfect for beginners. A small fan is driven by the engine's crankshaft to provide the engine with extra airflow. Oil-filled, coil-over shocks are included, and the cool Snakebite body is held on with Kyosho's easy-to-use, spring-loaded body-mounting system instead of instantly lost body clips.



LENGTH 17 in. (432mm)
WIDTH 11.4 in. (290mm)
WHEELBASE 10.4 in. (264mm)
WEIGHT 77 oz. (2,178g)

FEATURES

- Full-time 4WD with reverse.
- Lower A-arm suspension with one-piece upper links.
- Gear differentials.
- GS-11X engine with pull-starter.
- Oil-filled shocks.

PERFORMANCE

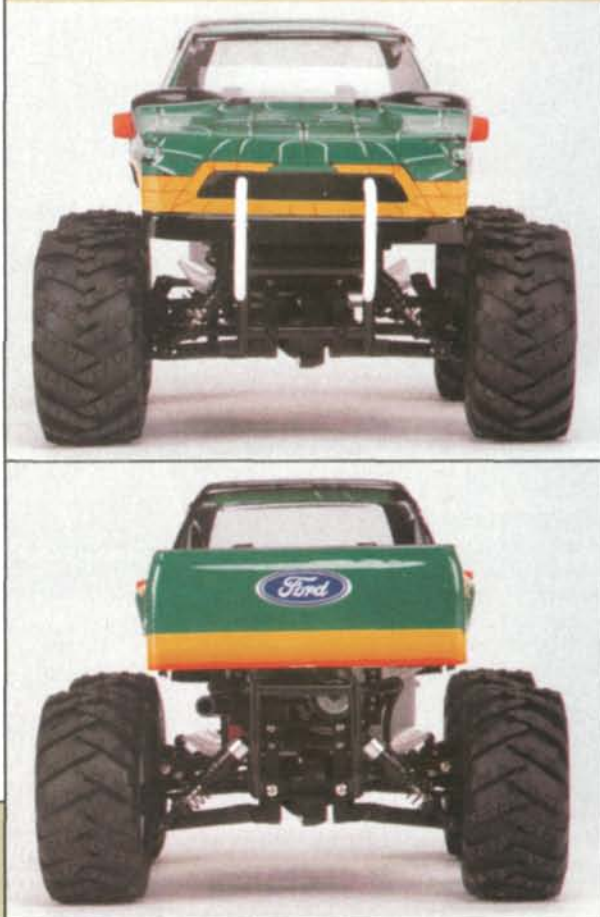
This truck is far from fast, but its low gear ratio gives it enough muscle to climb over almost anything (and an optional 2-speed transmission is offered if you simply must go faster). The GS-11X engine runs well, and the small fan keeps air flowing over the head to keep things cool. The transmission did make some funky noises when shifting from forward to reverse, but it *never failed to engage*. However, the QRC setup eliminates conventional brakes from the drive train (unless you consider slamming the truck into reverse to be "braking"). One final note: repeated forward-to-reverse shifting will eventually loosen the wheel nuts, so keep your box wrench handy.

*Addresses are listed alphabetically in the Index of Manufacturers on page 216. ■



REQUIRED ACCESSORIES

- 2-channel radio with receiver.
- 2 servos.
- Receiver battery.
- Fuel.
- Glow igniter.
- Polycarbonate-compatible paint.
- CA glue for the tires.



PHOTOS BY WALTER SIDAS

MRC Super Brain 819 Charger

No discussion of reliable, inexpensive peak chargers can omit the MRC* 809 Super Brain. Priced at less than \$50, the 809 became the step-up unit for many newcomers with mechanical chargers, and it allowed many other hobbyists to start off with the convenience of a peak-detecting charger and skip the hassle of ticking timers altogether. MRC recently released a successor to the 809 model—the 819. The new Super Brain is smaller and even simpler to operate than the original, yet it delivers superior performance—if what MRC claims is true. I tried the 819 myself; here's what I discovered.

FEATURES

The 819 is very compact, particularly for an AC/DC unit; it measures just 2.5x5x3.5 inches. It's also very plain-looking and sports only a single LED for a display. But that simplicity is all part of MRC's plan to make the Super Brain 819 as easy to use as possible: there's nothing to adjust.

• **Adaptive control algorithm.** According to MRC, the 819 is able to detect false peak, commonly found in older batteries, by one of two variables programmed into the charger. The first is a delta-peak-threshold voltage that starts with a base reading of 80mV and monitors the reduction of this initial voltage over time and battery voltage. The second detection variable is voltage-change rate compared to charge time. The variable speculates when the battery should peak and determines if the peak is false.

• **Automatic fast and trickle-charging.** When the battery is connected to the charger, it automatically senses the hookup and starts the fast-charge process. The battery can charge up to 40 minutes unless delta peak is sensed before 40 minutes. If the battery does charge up to the 40-minute mark, the charger automatically switches over to a trickle-charge mode to prevent over-charging. At this time, you can remove the battery, or you can leave it connected to the 819 to trickle-charge up to 90 minutes. After 90 minutes of trickle-charging, it automatically shuts off.

• **Safety timer.** As I just mentioned, the charger will switch over to trickle-charge after a 40-minute charge cycle, and it shuts off after 90 minutes of trickle-charging. If the charger is left plugged in and untouched for 120 minutes, the charger shuts off and must be unplugged and plugged back in to resume a charge.

TESTING

How does it work? Well, all you have to do is plug it into an outlet, plug in the battery, and the charger does the rest. To test the 819, I followed the instructions and hooked everything up; however, I did hover over the charger with a stopwatch and periodically checked the temperature of both the charger and battery; let's see what happened.

My first test was with a DuraTrax 1500mAh battery pack. The charge time on the 819 was 21 minutes. When I pulled the pack from the charger, I noticed the charger was warm and the battery still felt cool—close to room temperature. These temperature readings were exactly opposite to MRC's suggested readings. According to MRC, the charger should stay cool while the battery should peak and feel warm. So I placed the battery on a set of bulbs with a discharge rate of 20 amps. Within 4 minutes and 30 seconds, the battery had discharged, which is right around actual run time in a car. But I was still concerned that the battery had not reached full peak. So after the

battery cooled, I charged it again. Again, the charger switched to trickle-charge after 21 minutes and felt cool. This time, I unplugged the battery and then plugged it back in to see if the charger would peak the battery. After a short charge of 6 minutes, the charger shut off again. The battery was slightly warmer, almost unnoticeably so. I plugged the battery on the discharger again and noticed that it took 30 seconds longer to discharge, for a total of 5 minutes of run time.

My next set of tests was with a matched set of 2000s from Trinity. I hooked up the battery and logged a charge time of 26 minutes, and the battery came off cool. On the bulbs, the discharge lasted 5 minutes and 30 seconds. I then hooked the battery up to my Tekin charger as a "second opinion" to check charge time. At a charge rate of 4.5 amps, the battery charged in 26 minutes, felt warm and lasted 6 minutes on the bulbs. After these tests, I charged three packs in a row to see if the warm charger would be a problem. The temperature didn't vary above or below a warm feeling, proving that the 819 can take constant charging without damage.

The Super Brain 819 does charge the battery without overheating and damaging the battery. I highly recommend monitoring the battery's temperature after a charge. If it is cool, unplug and plug the battery in for a final peak charge, but do so only once. Overall, it's an excellent charger that is a bit on the "conservative" side; if you care more about getting more runs from your pack than getting every second from each charge, this could be your charger. Although it doesn't peak a battery at its full potential, it does do the job without damaging your packs. The fact that the battery comes off charge cool means that the 819 is not beating your battery and will extend its life. For the price, you can't beat the MRC Super Brain 819. —Greg Vogel



Likes

- Inexpensive.
- AC/DC operation.
- Plug the battery in, and the charger does the rest.
- Several safety features.

Dislikes

- Didn't charge the battery to its full potential.

MANUFACTURER'S SPECIFICATIONS

Cell compatibility	7.2 to 8.4V Ni-Cd
Charge type	micro-peak
Peak detection	delta
Input	AC/DC
Supplied output connector	JST (Tamiya style)
Supplied input connectors	AC plug; DC clamps

Hammad Ghuman Yank Eliminator

Every now and then, a product comes along that makes you ask: why didn't anyone think of this sooner? That's exactly the question I asked myself when I first got a look at Hammad Ghuman's* new Yank Eliminator engine-starter for nitro-powered vehicles equipped with transverse-mounted pull-start engines. Let's take a closer look at this innovative product.

WHAT DOES IT DO?

The Yank Eliminator is designed to be chucked into a cordless drill so it can function as a starter for your nitro vehicle. It replaces your vehicle's pull-start mechanism, which must be removed

from the engine (this eliminates 2 ounces or more of dead weight, which is a good thing). The pull-starter's backplate will now be exposed to allow access to the engine's crankshaft; the Yank Eliminator simply slides over the exposed shaft. Squeeze the trigger on your drill, and the crankshaft is spun to start the engine. Once the engine starts, the Yank Eliminator's one-way bearing allows the crankshaft to spin freely. This

prevents the engine from stalling before you can remove the Yank Eliminator.

CAN I USE IT ON MY VEHICLE?

If you have a tuned pipe and the exhaust header blocks the path to the starter shaft, you will not be able to use the Yank, and it won't work on inline-mounted engines.

HOW DOES IT WORK?

I had a brand-new HPI Nitro RS4 2 on my workbench for testing and was able to use the Yank Eliminator on it. It fit my Craftsman 3/8-inch



Likes

- Reliably and efficiently starts an engine.
- Allows you to remove the heavy pull-start mechanism from your vehicle.
- High-quality, machined-aluminum construction.

Dislikes

- It's a little pricey.
- Only works with certain engine configurations.

cordless drill perfectly. The drill is advertised as having 1/3hp, so I was convinced it would be up to the task. The Yank started the engine without hesitation, and I soon learned to start it without removing the body.

—George M. Gonzalez

Part no. 9300 (6mm bearing, fits most engines); \$29.95.
—9301 (for O.S.* CV); \$29.95.

Trinity Pocket Wrenches

If you've been carrying a big bulky box of nut drivers to the track every week, you'll welcome Trinity's* new pocket-wrench nut drivers; they are made of lightweight aluminum and are available in sizes for all commonly used nuts. Their knurled grips deliver as much torque as "full-size" nut drivers, yet they won't take up an entire drawer in your pit box. A thin chamfer around the socket prevents your shock bod-



ies from getting scarred when you use the tool to remove top mounting nuts. The "stubby" design comes in handy when adjusting a slipper clutch, since it allows you to access the nut without removing the right wheel.

Part nos.—TK5043 (3/16 in.); TK5044 (1/8 in.); TK5045 (5/16 in.).
Price—\$21.99.

DuraTrax Body-Repair Tape

Nothing is more annoying than those cracks that appear at the tops of fender wells and other damage-prone areas of Lexan bodies. Instead of fixing the crack with CA glue (that will itself eventually crack), use DuraTrax* body-repair tape.

Apply the tape over the damaged area inside the body and spread a coating of Shoe-Goo (DTXC2460) over it to complete the repair. This fix works well and is durable, but it does add a little weight. (You can even apply the tape to a new body to prevent it from cracking.)

Part no.—DTXR1210.
Price—\$3.59.

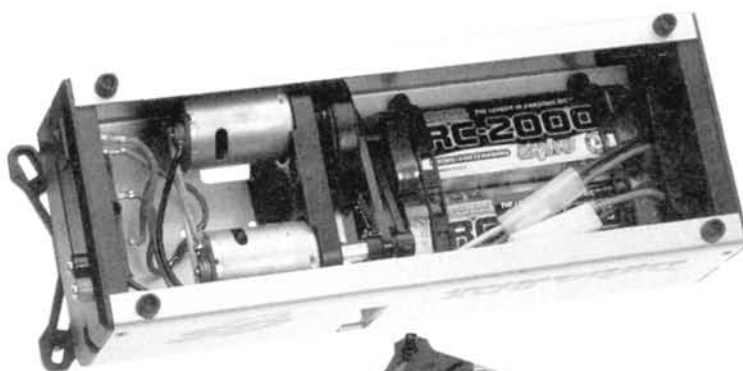


GS Racing Turbo Box

Build a better mousetrap, and the world will beat a path to your door. This cliché could apply to the RC industry, as it seems everyone is trying to build a better starter box. General Silicones, better known as GS Racing*, has just introduced its new "mousetrap": the Turbo Box Super Starter. Is this the box of all boxes? Let's see what's inside.

FEATURES

An instruction manual with color pictures is included in the kit; be sure to read it before you begin building. Although it's not difficult to build, putting the box together will take a good chunk of bench time (it took me about an hour and a half). The starter-box case is made of lightweight aluminum and comes anodized in purple or silver. You'll notice the T-shaped opening in the center of the box. This cutout allows the starter wheel to poke out in one of three possible locations. The box can start left- or right-side-mounted engines, as well as engines that are mounted across the chassis.



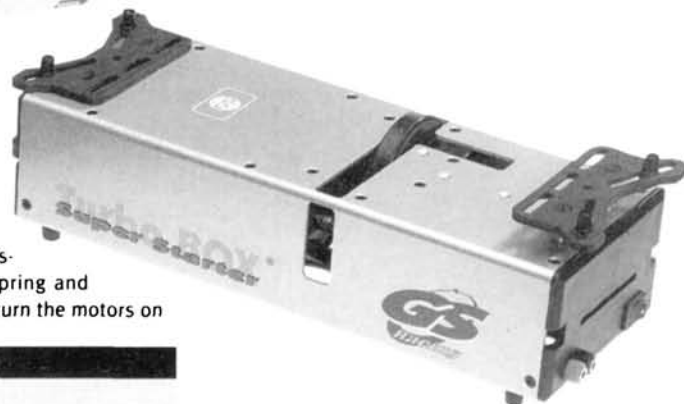
The guide plates on top of the box are universal and feature adjustable pins that slide into a position that will hug your car's chassis. A long screw with a spring and washer acts as a switch to turn the motors on.

Likes

- Lightweight.
- Three wheel positions.
- Adjustable guide plates fit most cars.
- Power switch.

Dislikes

- Assembly is time-consuming.



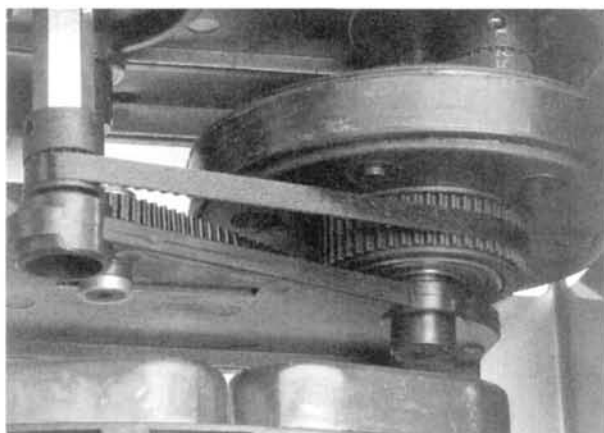
All the wiring necessary to hook up two 7.2V batteries is supplied, as are jacks and an extension cord to hook up the box to an external 12V power source. One feature that stands out is the power switch, which eliminates inadvertent operation of the starter box—for instance, in your gear bag as you travel to a race.

TESTING

With two DuraTrax 2000mAh batteries strapped inside the box, I placed my Thunder Tiger EB4 on the box and fired it up—no problem! The dual 540 motors provided more than enough torque to turn over the buggy's tight, new engine, so smaller displacement engines should not present any problems. With the adjustable guide plates and three wheel placements, I can start every car in my fleet.

—Greg Vogel

Part nos. GSS00011SL (silver), GSS0001PR (purple). Price: \$119.99.



as the starter plate is compressed.

Inside the box are two 540-size starting motors. Two Kevlar belts transfer power from the pinions on the motors to the starting wheel. The wheel consists of two plastic plates that are keyed to the rubber starting wheel and bolt together with screws. These components are supported by large ball bearings. A ball-bearing tensioner is also provided for the one long drive belt.



Hammad Ghuman Nitro RS4 Hub Carriers

Beef up your Nitro RS4 with Hammad Ghuman's* aluminum hubs. They are machined from strong T6 aluminum and are anodized purple to give your ride a custom look. To make it possible to alter ride height, there are two holes for the hinge pin; another two holes may be used to change the upper camber-link position. I installed a pair of HG hubs without difficulty; everything fit properly and moved freely. Part no.—2350. Price—\$39.95.

Dave Gierke Flying Models Inc. Demon-Clean

Dirt and oil baked on the side of your engine or around the exhaust is not only an eyesore but, because it retains heat, can also damage your engine. Demon-Clean* will help you wash away the ugly brown buildup and bring your engine's cooling potential back to normal. I took a well-used .12 engine with a small exhaust and gave it a good cleaning with Demon-Clean. It removed almost all the baked-on garbage, and the engine looks like new. Price—\$18.95.



*Addresses are listed alphabetically in the Index of Manufacturers on page 216. ■

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ALABAMA

Beacon Point RC Raceway, 15717
Beacon Point Dr., Tuscaloosa, AL 35406;
Don, (205) 333-8679

Hobbytown USA Raceway, 450-Q
Schilling Rd. N., Mobile, AL 36608;
Rob & Kari Baker, (334) 633-8446

Lagoon Park R/C Raceway, 2730
Lagoon Park Dr., Montgomery, AL
36109; Alex Love, (334) 272-6438

Phenix Raceway & Hobby,
2006 Opelika Rd., Phenix City, AL
36867; Chris Watson, (334) 298-9786;
<http://www.xoom.com/PhenixHobby>

R/C Hi-Tech Raceway, 3303 Meridian
St., Huntsville, AL 35811; Rick
Chambers, (205) 539-1347.

R/C Thunder Tracks, 1530 Schilling
Rd., Mobile, AL 36675; for mail, use
8125-2 Moffett Rd., Semmes, AL
36575; Jerry Hurst, (334) 645-2787

ALASKA

Fairbanks R/C Car Club, 510 Juneau
Ave., Fairbanks, AK 99701;
Dan Anderson, (907) 456-5494

ARIZONA

Craft Barn Raceway, 11200 E. Hwy.
95, Yuma, AZ 85365; Matt Poston,
(520) 726-1946

HobbyTown Mountain Raceway,
1500 E. Cedar Ave., Cedar Hills
Shopping Center, Flagstaff, AZ 86004;
Richard, (502) 214-9887

HobbyTown Raceway, 1915 East
Baseline Rd., Gilbert, AZ 95234;
Dennis, (602) 892-0405

Hobbytown Raceway,
1102 E. 22nd St., Tucson, AZ 85704;
(520) 882-8888

HobbyTown U.S.A., 5030 E. Ray Rd.,
Phoenix, AZ 85044; Linda McFarland,
(602) 598-5282

Kiwanis Park R/C Raceway, 855 S.
Magnolia Ave., Yuma, AZ 85364; Jim
Liggett, (520) 539-7148

**Quarter Flash's Squirting Dirt
Raceway**, 16301 S. Santa Rita #C,
Sahuarita, AZ 85629;
Dave, (520) 625-9274

R/C Sports Mania, 3550 N. 35th Ave.,
Phoenix, AZ 85017;
Brian Dick, (602) 278-3671

Scottsdale R/C Raceway, 3023 N.
Scottsdale, Scottsdale, AZ 85251; Scott
Anfinson, (602) 945-2186

Speedway Hobbies, 2710 N. Steve's
Blvd., Ste. 8, Flagstaff, AZ 86004;
Gary McAllister, (520) 714-1566

ARKANSAS

Alison Offroad RC Raceway,
6320 Thibault Rd., Little Rock, AR
72206; Steve or Coop, (501) 490-1227

Arkansas R/C Car Association,
101 W. 52nd St., N. Little Rock, AR
72118; William Byrd, (501) 753-1286

Airport Speedway, 1521 Airport Loop,
Rogers, AR 72756;
Mike Dollar, (501) 636-7123

Grand Slam Superspeedway, 5300 S.
Zero St., Ft. Smith, AR 72901;
Bryon Shumate, (501) 648-1994

Hobby Town USA, 356 E. Joyce,
Fayetteville, AR 72703; Darrell Irvin,
(501) 571-3730

Sparks R.C. Raceway, 7194 Greene
721 Rd., Paragould, AR 72450;
Tommy Sparks, (501) 239-3606

CALIFORNIA

California R/C Raceway,
1230 N. Kramar, Anaheim, CA 92806;
Taka, Sid, or Charlie, (714) 630-9300

Castle Hobbies, 14918 Camden Ave.,
San Jose, CA 95124; (408) 377-3771

Delta R/C Speedway & Hobbys,
1201 W. 10th St., Antioch, CA 94585;
(925) 778-2965

Desert Hobbies, 28-401 Date Palm Dr.
Cathedral City, CA 92234; Mike Beall,
(760) 320-9442

Gooch Raceway & Hobbies, 115C N.
Chevy Chase Dr., Glendale, CA 91206;
Devin Last (818) 562-2380,
fax (818) 242-0525

Hobby Central Raceway, 34255 P.C.H.,
Unit 107, Dana Point, CA 92629; John,
(619) 513-0373

Hobby Central II Raceway, 13461
Community Rd., Poway, CA 92064;
John, (619) 513-0373

HobbyTown, Parktown Plaza Shopping
Center, 1350 S. Park Victoria Dr. #21,
Milpitas, CA 95035; (408) 945-6524

Hot Rod Hobbies, 25845 San Fernando
Rd., #21, Saugus, CA 91350;
Rod Weisbaum, (805) 255-2404

Jake's Performance Hobbies, 6650
Commerce Blvd., #21, Rohnert Park, CA
94928; Jake, (707) 586-3375

Just for Fun R/C Raceway, 509 S. State
St., Ukiah, CA 95482;
Don, (707) 462-7305

Lucerne Valley Raceway, 32800 Old
Woman Springs Rd., #4, P.O. Box 2047,
Lucerne Valley, CA 92356; Frank
Rodrigue, (760) 248-7305

M n M Hobbies, 4225 Prado Rd., Ste.
103, Corona, CA 91720;
Joe Stanovich, (909) 272-3545

Racer's Haven Raceway, 7401 White
Ln. #12, Bakersfield, CA 93309; Martin
Buchanan, (805) 835-0441

Radio Control Products, 201 E.
Magnolia Blvd., #148, Burbank, CA
91502; Tab, (815) 846-4208

**Rams 1/8-scale Gas and 1/16-scale
Gas On-Road**, Mission College, Lot B,
3000 Mission College Blvd., Santa
Clara, CA 95054-1897; Steve Tsuruda,
(415) 675-5609

Rattlesnake Raceway, 16470 Benson
Rd., Cottonwood, CA 96022; Mel or
Mike Fisher, (530) 347-7215, email: RC-
geezee@webtv.net, website:
<http://members.xoom.com/CAR-RCORR/Race.html>

Rescue Mini Speedway, 4018 Green
Valley Rd., Rescue, CA 95672; Bruce
Pease, (530) 621-3948

Ripon R/C Speedway, 701 N. Acacia
Ave., Ripon, CA 95366; Dan Tanis,
(209) 599-5160

R.O.C.K.S., 2525 N. Texas St.,
Fairfield, CA 94533;
Mike, (707) 207-0305;
<http://members.aol.com/solanorock>

Sacramento RC Racing and Hobbies,
6201 27th St., Sacramento, CA 95824;
Andreas Muller,
(916) 424-4001, email:
andreas123@earthlink.net; website:
www.77sunset.com

Showtime R/C Speedway, 3709 Abbott
Dr., Bakersfield, CA 93312; Grant or
Karen, (805) 589-0493

Simi Valley Groundpounders,
392 C - East Easy St., Simi Valley, CA
93065; Jack Kasten, (805) 584-8211

So. Cal R/C Raceway, 19118
Brookhurst St., Huntington Beach, CA
92646; Jim Blauvelt, (714) 963-7484

Speedworld Raceway, 90 Corporation
Yard Rd., Roseville, CA 95678;
Billy Bowerman, (916) 783-8864

Tri-Valley Auto Racers, Livermore Elks
Club, 940 Larkspur, Livermore, CA
94550; Mike Stone,
(510) 455-6833

Ultimate Hobbies, 2378 North Orange
Mall, Orange, CA 92665;
Cliff Murukami, (714) 921-0424

COLORADO

MHOR R/C Raceway, 15540 East
Batavia Dr., Aurora, CO 80011; Jess
Brockman, (303) 343-0151

Race of Champions R/C Speedway,
300 West 53rd Pl., Unit B, Denver, CO
80216; Dan DeWild, (303) 296-4908

Valley West Off-Road RC Club, 447 30
1/4 Rd., Grand Junction, CO 81504;
Waymond Williams, (970) 242-8846

CONNECTICUT

Central CT Auto Racers, Davis
Hobbies II, 45A Welles St., Glastonbury,
CT 06033; (860) 633-3056

East Lyme R/C Kar Klub, Society Rd.,
East Lyme, CT 06333; Howard Estorm,
(203) 483-9201

K/N R/C Speedway Inc., West St.,
Stafford Springs, CT 06076; for mail,
44 Clearview Rd., Moodus, CT 06469,
(860) 684-9896

Racing and Entertainment Center,
29 Olcott St., Manchester, CT 06040;
Peter Tierinni, (860) 643-4768

R/C Madness, 640 Enfield St.,
P.O. Box 64, Enfield, CT 06082;
Christopher Marcy, (860) 741-6501

Xtreme Radio Control, 469 Danbury
Rd., New Milford, CT 06776;
Paul or Pete, (860) 354-4703

DELAWARE

The Hobby Outlet: Tracks of the Outlet,
Salisbury Rd., Dover, DE 19901; Steve,
(302) 697-8350

Hobby Stop Speedway, RD4, Box 100,
Rte. 13, Seaford, DE 19973; Remy
Haynes Jr., (302) 629-3944

FLORIDA

B&T RC Central, 811 Playground Rd.,
Ft. Walton Beach, FL 32547; Tim
Miller (850) 863-1666

Broward County R/C Race Club,
Mills Pond Park, Ft. Lauderdale, FL; Ed
Decembro, (954) 525-3304

Burton's R/C Raceway, 4215 Mustang
Rd., Lakeland, FL 33803; Louie Burton,
(941) 665-1322

Coral Springs Roadrunners, P.O. Box
9632, Coral Springs, FL 33075;
John Argentino, (954) 925-8284

Extreme Raceway and Hobbies, 4010
N. Lois Ave., Tampa, FL 33614; Mike
Bevel, (813) 877-7223

Farmer's Hobby Shop & Raceway,
5006-3 E. Broadway, Tampa, FL 33619;
Greg Cardone, (813) 248-3314

First Coast Speedway, 6410 Waltho
Dr., Jacksonville, FL 32211; Bob
Thompson, (904) 743-2161

Frontier Race Track, 15260 N.E. 244th
Ave., Salt Springs, FL 32134; Harold
Reel, (352) 685-2881

G & C Hobby Raceway, 1228 Hypoluxo
Rd., Lantana, FL 33462; George, (561)
547-3812

Greater Orlando Auto Racers, 970
Keller Rd., Altamonte Springs, FL
32714; Rob Michael, (407) 834-9299

Hobby World Raceway, 7273 103rd
St., Jacksonville, FL 32210;
Greg, (904) 772-9022

Kissimmee R/C Auto Racing, Model
Craft World, Osceola Square Mall, 3831
West Vine St., Ste. 60, Kissimmee, FL
34741; John Rosser, (407) 944-4913;
email: john@craftworldflorida.com;
website: craftworldflorida.com

Means R/C Raceway, 150 Pondell Rd.,
North Fort Myers, FL 33903; Pete
Gonzalez, (941) 772-2251; email:
jaimewootton@worldatt.net;
<http://members.xoom.com/woot/>

Monster Hobbies, 616 Southeast 10th
St., Deerfield Beach, FL 23441;
(954) 428-9118

**Morris Kohl's Raceway and Hobby
Shop**, 1202 W. Waters Ave.,
Tampa, FL 33604; Morris Kohl,
(813) 931-1626

My Rose, 1695 W. Indiantown Rd.,
Jupiter, FL 33458;
Mark Watson, (561) 744-3800

NORRA, 3300 Santa Barbara Blvd.,
Naples, FL 34104; Dan Rodriguez,
(941) 352-9021

KEY TO SYMBOLS

	Indoor		Concrete
	Outdoor		Asphalt
	Off-road		On-site hobby shop
	Oval		AC power
	Dirt oval		Auto lap counting
	Carpet		Food available

Ocala Radio Controlled Car Club, P.O. Box 70166, 2610 SE 8th St., Ocala, FL 34470; Bonita Hansley, (800) 324-8882, ext. 250; email: staff@ORCCC.org; www.ORCCC.org

Paradise Speedway, Mile Marker 98.5 U.S. 1, P.O. Box 738, Key Largo, FL 33037; Joe Ravard, (305) 451-3707

Paul's Stadium Raceway, 4511 W. Dr. M.L. King Jr. Blvd., Tampa, FL 33614; Paul Surette, (813) 872-8662

PBG R/C Motor Park, 6351 Barbara St., Palm Beach Gardens, FL 33418; Doug Gleason, (561) 743-9791 or Tim Case, (561) 627-2608

Pro Hobbies Speedway, 715 N. Lake Pleasant Rd., Apopka, FL 32712; (407) 886-4615

Port St. Lucie Racing, 3626 SW Rivera St., Port St. Lucie, FL 34953; Frank Spadavecchia, (561) 336-8711

Randy's RC Raceway, 7744 Glenwood St., Clermont, FL 34711; Randy Zimmer, (352) 242-0557

River City R/C Car Club, 9711 Sharing Cross Dr., Jacksonville, FL 32257; Bill Fraden, (904) 268-1948

Santa Cruz Race Track, 8150 NW 71 St., Miami, FL 33166; Maxy or Eric, (305) 471-8133; email: maxy@iamnet.com; web: www.danshobbies.com

Sea Coast Watercraft and Hobby, 3119 Barrancas Ave., Pensacola, FL 32507; Vic Lakatos, (850) 457-1493

South Daytona R/C Raceway, 2121 S. Ridgewood Ave., South Daytona, FL 32119; Mike Bean, (904) 426-6481

South Palm Beach Racers, South County Regional Park, West Boca Raton, FL 33486; Mike Fazio, (561) 338-5367

Superior Hobbies R/C Parking Lot Racing, 430 E. Hwy. 436, Ste. #106, Casselberry, FL 32707; Rob Michael, (407) 834-9299

Tampa Bay R/C Club, P.O. Box 10224, St. Petersburg, FL 33733; Dick Gillette, (813) 526-0744

Tampa Hobbytown R/C 4 Slot Car Raceway, 15702 N. Dale Mabry, Tampa, FL 33618; Max and Judy Rosenroth, (813) 968-7233

Tropical R/C Raceway, Tropical Park, Miami, FL 33155; Pat Butler, (305) 772-4122

University RC Speedway, 8475 Cooper Creek Blvd., University Park, FL 34201; Mike Boylan, (941) 358-7047

Warehouse Hobbies, U.S. Rt. 27 South, Winterset Motel, Sebring, FL 33872; Tony and Pam Castronova; (941) 699-1231

GEORGIA

Anthony's Victory Lane, 129 East Hwy. 80, Pooler, GA 31322; Anna Stephens, (912) 748-0847

Bullet Raceway and Hobby, 3735 Old Flowery Branch Rd., Oakwood, GA 30566; Mark Taaffe, (770) 534-9229

Dalton Raceway, 3036 Parquet Rd., Dalton, GA 30720; (706) 226-6699

Echeconnee Superspeedway, 2149 Richardson Dr., Macon, GA 31206; Andy Thompson or Cliff Kline, (912) 788-8731

Emerald City R.C. Speedway, Highway 40 East, East Dublin, GA 31021; Terry Cook, (912) 272-3856

The Flight Box Hobby Shop, 3134-C Rockmart Rd., S.E., Rome, GA 30161-6826; Leslie Duke, (706)-234-3014

Hobby Town Raceway, 2301 Airport Thruway, Columbus, GA 31904; Frank Bastos, (706) 660-1793

Lake Mayer Raceway, 1430 Dale Dr., Savannah, GA 31406; (912) 598-9709

The Racer's Edge, 1530 Hwy. 19 N., Thomaston, GA 30286; Roger or Mark Walls

Sandy Cross Speedway, Rt. 1, Box 1071, Hwy. 51, Royston, GA 30662; Morris Phillips or Wayne Fowler, (706) 245-9573

Shiloh R/C Raceway, 6362 Shiloh Rd., Hahira, GA 31632; Doug Burnett, (912) 794-2507

Silver Wings Raceway, 5611 Riverdale Rd., College Park, GA 30349; M. Bradshaw, (770) 991-2225

Stinger RC Super Speedway, 3769 Maysville, Rd., Commerce, GA 30529; Deric Sauls, (706) 335-5006 or (706) 335-9044

Sugar Bowl R/C Speedway, 5272 Nelson Brodgon Blvd., Sugar Hill, GA 30518; Shelley Bailey, (770) 945-6709

HAWAII

Garden Isle R/C Racers, 5855 Ahakea St., Kapaa, Kauai, HI 96746; Arnold Morales, (808) 823-0856

Kakaako Water Front Park Dragway, 98-029 Hekaha St., Bay #32, Alea, HI 96701; James Inkyo, (808) 487-5155

Maul R/C Racing Association, 230 Hana Hwy., Unit 11, Kahului, HI 96732; Garret or John, (808) 873-0376; (808) 893-0116, or (888) 646-6687

Pearl City Raceway, 98-029 Hekaha St., Bay 32, Alea, HI 96701; James Inkyo, (808) 487-5155

Radio Control Hawaii, 474 Kalanikoa St., S-104, Hilo, HI 96720; Glenn Shiroma, (808) 935-5629

Team PRC Racing Club, 176 Mamo St., Hilo, HI 96720; Charlie, (808) 935-3561

IDAHO

Almosta Ranch Speedway, 1732 Eldridge Ave., Twin Falls, ID 83301; Casey Clements, (208) 733-8219

Capital Dirt Burners, 1612 Latah, Boise, ID 83705; Jim Small, (208) 433-1631

Dirt Stuff Plus, 5344 N. Yellowstone Hwy., Idaho Falls, ID 83401; Brian Krah, (208) 522-7576

ILLINOIS

Adams R/C Raceway, 7201 S. Adams, Bartonville, IL 61607; Ray Tighe, (309) 633-9300

AJ's Raceway & Hobby, 10211 Keslinger Rd., DeKalb, IL 60115; A.J. Schultz, (815) 756-2772

C.I.R.C.A., 905 Bibbs St., Jacksonville, IL 62650; Sport 'n' Hobby, (217) 245-1375

C&R Hobbies, 39 E. Jones, Milford, IL 60953; Ray, (815) 889-4073

Depot Hobby Raceway, 180 S. Seminary St., Galesburg, IL 61401; (309) 342-9323

H & H Hobbies and Raceway, 9346 Virginia Rd., Lake in the Hills, IL 60102; Mike Hollingsworth, (847) 458-1777

Hans' RC Race Place, 2051 2100th St., Atlanta, IL 61723; Hans Bishop, (217) 648-2915

HobbyTown Raceway, 2103 N. Veterans Pkwy., Bloomington, IL 61701; Gary Pritts, (309) 664-4451

Leisure Hours R/C Raceway, 24121 W. Theodore, Bldg. 1, Plainfield, IL 60544; Scott Hill, (815) 439-1777 (track), (815) 439-1477 (shop)

Machesney Park, 1220 Shappert Dr., Machesney Park, IL 61115; (815) 282-1311

Marty's R/C Hobby, 1335 E. Broadway, Bradley, IL 60915; Gail or Marty, (815) 933-8441

Monee R/C Raceway, 26049 Ridgeland Ave., Monee, IL 60449; Roy or Roberta Moody, (708) 534-2422 (track), (708) 799-5597 (office)

Outlaw R/C Speedway, 1614 Broadway, Mattoon, IL 61938; (217) 234-6229

Pontoon Raceway, 3670 St. Rte. 111, Granite City, IL 62040-4304; Pat or Skip, (618) 931-1206

Quad Cities Radio Raceway, 541 1st Ave. North, Silvis, IL 61282; Tom Bedwell, (309) 751-9663

Radio-Active Raceway, 751 N. Bolingbrook Dr., #15, Bolingbrook, IL 60440; Jim, (630) 759-7557

Rector's R/C Raceway, RR 3, Box 104, Albion, IL 62806; Tim Wolfe, (618) 842-9379 (M-F), (618) 446-3282 (Sun.)

RMR Raceways, 19091 West Casey Rd., Libertyville, IL 60048; Ron Rawald, (847) 549-6963

Shiloh Eagles Superspeedway, 308 N. Virginia Ave., Belleville, IL 62220; (618) 277-6030

SIRCAR Raceway, 1200 N. Marion, Carbondale, IL 62901; (618) 549-5885

Stanton Hobby Shop, 4718 N. Milwaukee, Chicago, IL 60630; Kevin Kane, (773) 283-6446

Valley Farms R/C Raceway, 706 Bypass 20, Cherry Valley, IL 61016; Dean or Debbie, (815) 332-4516 or (815) 547-5984

Wep Speedway, RR #2, Box 44, Lawrenceville, IL 62439; Bill Poe

INDIANA

BD R/C Off-Road Racing, 13255 Chippewa, Mishawaka, IN 46545; Betty or Bob, (219) 257-1098; 02kie@aol.com; www.angelfire.com/in/bdrcotfroad/index.html

Bremen Racing Ent., 308 N. Bowen, Bremen, IN 46606; Dale Heuberger, (219) 546-3807

The Dirt Yard, 1117 W. Epler Ave., Indianapolis, IN 46217; Keith Dudas, (317) 786-6417

GM Raceway, 1651 W. Franklin St., Elkhart, IN 46516; Pete Russell, (219) 293-1827

Hardesty R/C Raceway, 11 East Plymouth St., Hamlet, IN 46532; Max Hardesty, (219) 867-8600 or (219) 772-6566

Hobby Barn Raceway, 1950 Springhill, Terre Haute, IN 47802-9694; (812) 299-5773

Hobbytown U.S.A., 5385 E. 82nd St., Indianapolis, IN 46250; Bill Scott, (317) 845-4106

Nitro R/C Speedway, 4310 West 400 South, Danville, IN 46122; John Webber, (317) 539-4413; email: nitrocr1@aol.com

P&T Hobbies and Raceway, RR 2 (Hwy. 60), Mitchell, IN 47446; Paul Weber or Tom Logsdon, (812) 849-6666; email: pnthobby@bigfoot.com

Race Street Hobbies, 1126 1/2 Race St., New Castle, IN 47362; Jim Burke, (765) 521-4888

RC Barn, 310 N. 125 W., Monroe, IN 46772; Mark Lengrich, (219) 692-6600

R/C World of Indiana, 2246 West U.S. Hwy. 36, Lynn, IN 47355; Joe Kolp, (765) 874-2464; e-mail: rcworld@glob-alisite.net; web: www.RCWORLD.com

R/C Mania, 8 Wood Ct., Hebron, IN 46341; Ron Trobaugh, (219) 996-6288 (shop); (219) 762-5365

The Link, 7900 Whitcomb, Merrillville, IN 46410; Don Reiner, (219) 769-8113

Showtime Lot Racing, 606 Lower Huntington Rd., Fort Wayne, IN 46815; Mike Romines, (219) 478-6099

Summit Area Radio Cars (SARC), 7000 Red Haw Dr., Fort Wayne, IN 46805; John Kissel, (219) 492-2271

IOWA

Delb's Speedway, 423 11th Ave. So., Clinton, IA 52732; Rusti's Miniatures and Hobbies, (319) 243-2697

Hobby Haven, 7672 Hickman Rd., Des Moines, IA 50322; Rick Marble, (515) 276-8785

IROA—Hawkeye Downs Raceway, Hawkeye Downs, 6th St. S.W., Cedar Rapids, IA 52404; Dave Kleinschrodt, (319) 556-8524

Manly R/C Club, Box 23 (Hwy. 65), Manly, IA 50456; Bruce Hill, (515) 454-2025

Mr. Car Raceway, P.O. Box 1112, Central Iowa Fairgrounds, Marshalltown, IA 50158; Jim Gossett, (515) 483-2234

Outback Speedway, 108 West Iowa, Greenfield, IA 50849; Helens Enterprises, (515) 747-3064, trackside (515) 343-7004

Radio Control Raceway Park, 2100 First Ave. N., Fort Dodge, IA 50501; Bernie Halverson, (515) 576-3780

Riverside Raceway, Veteran's Park, Algona, IA 50511; Mike Beisch, (515) 295-9352

Wild Bill's Raceway, 901 W. Jones, Knoxville, IA 50138; William Anderson Jr., (515) 842-5973

KANSAS

Ebersole Hobby and Raceway, 11417 W. Hwy. 54, Wichita, KS 67209; Sherri McWilliams, (785) 722-8888

Hobbytown USA, 2016 W. 23rd, Lawrence, KS 66046; Kevin Decembar, (785) 865-0883

Mike's R/C Hobbies, 121 SE 29th St., Unit #3, Topeka, KS 66605; Mike Barnard, (913) 266-5767

Ottawa Outlaw Raceway, 114 South Main, Ottawa, KS 66067; Tom Wilson, (913) 242-1450

R/C Superdome and T.Q. Pro Shop, 14 E. Avenue A, Hutchinson, KS 67501; Cody or Joe, (316) 665-6633

R.C.R.C. Raceway of Salina, 1300 E. Crawford, Bill Burke Park, Salina, KS 67401; Calvin, (913) 823-9588

T.Q. Pro Shop, 14 E. Ave. A, Hutchinson, KS 67501; Cody Jandrakovic, (316) 665-6633

KENTUCKY

Dixon's R/C Raceway, 1428 Lost Creek Rd., Hazard, KY 41701; Jeff Dixon, (606) 436-4820

Pit Stop Hobbies, 106 A St., Benton, KY 42025; Robert Fitzgerald, (270) 443-0052

Somerset Raceway, 188 Sycamore Dr., Bronston, KY 42518; Denny, (606) 561-4522

Trio Hobbies & R/C, 216 Redmar Plaza, Radcliff, KY 40160; Maurice Johnson, (502) 351-7547

LOUISIANA

Baton Rouge Velodrome, 7122 Perkins Rd., Baton Rouge, LA 70815; Weldon Sharon, (225) 665-5616

Gator R/C Raceway, 3691 Hwy. 171 N., Lake Charles, LA 70611; Tony Diaz, (318) 855-3206

Pontchartrain Hobby Shop, 3755 Pontchartrain Dr., Slidell, LA 70458; (504) 649-1199

MAINE

Clay Bowl R/C Hobbies, P.O. Box 61, Greene, ME 04236; Pat Cap, (207) 946-5003

R/C Speedway & Hobbies, 87 Main St., Fairfield, ME 04963; David Prescott, (207) 453-4588

MARYLAND

Doug's Raceway, 2935 Crain Hwy., Waldorf, MD 20601; Doug Moran Jr., (301) 843-6220

Hobby Town USA, 8223-11 Elliot Rd., Easton, MD 21601; Bill Dyke, (410) 820-9308

J.R.'s Race Place, 2935 Crain Hwy., Waldorf, MD 20601; James Radford, (410) 947-2766

Outback R/C Race Club, Maiden Ln., Manchester, MD 21102; Randy or Bonnie Henry, (410) 374-2878

The Track, 16806 Oakmont Ave., Gaithersburg, MD 20877; Mimi Wong, (301) 417-9630

MASSACHUSETTS

Boys Toys, 40 Father Davol Blvd., Fall River, MA 02721. (508) 677-9400

FOCUS

C&C Hobby & Raceway, 562 Russells Mills Rd., So. Dartmouth, MA 02748. Charlie. (508) 997-4131

FOCUS

Hi-Tech Hobbies, 1681 Broadway (Rt. 138), Raynham, MA 02767. Ruben. (508) 880-5373

FOCUS

Megadrome Raceway, Rt. 8, Curran Hwy. North Adams, MA 01247. Bob Blanchette. (413) 743-7223

FOCUS

Northboro Speedway, 168 Main St., Rte. 20, Northboro, MA 01532. Bob Trimble. (508) 933-8087

FOCUS

MICHIGAN

D.R. R/C, 22789 Northline Rd., Taylor, MI 48180. Bobby or Fred. (734) 287-7405

FOCUS

Freedom Hill R/C Raceway, 35372 Wellston, Sterling Heights, MI 48312. Jim McKenna. (810) 268-3996

FOCUS

Great Lakes R/C Racer's Club, 632 Plymouth Ave. NE, Grand Rapids, MI 49505. (616) 948-9798 or (616) 948-9814; email: GrLksRacers@aol.com, www.members@aol.com/grlksrccw/index.html

FOCUS

Hobby Hub, 5859 M99, Diamondale, MI 48821. Verne Goebble. (517) 337-9278 or (517) 351-5843

FOCUS

Jon's Hobby, 4739 E. Pickard, Mt. Pleasant, MI 48858. Jon Beutler. (517) 773-5412

FOCUS

JT Superspeedway, W. Golden Ave., Battle Creek, MI 49015. Jerry or Sam. (616) 965-0116

FOCUS

Larry's Performance R/Cs, 43665 Utrca Rd., Sterling Heights, MI 48314. Larry. (810) 997-4840

FOCUS

Lazer RC Speedway, 2858 N. Wilmoth Hwy., Adrian, MI 49221. Russ Johnson. (517) 263-2806

FOCUS

Motor City Speedway, 1602523, mile. Rd., Macomb Township, MI 48042. Gary Cornwall. (810) 677-2470

FOCUS

N.M.R.C.C. Raceway, Hobby Toy, Main St., Gaylord, MI 49735. Ed Schneider. (517) 732-3963

FOCUS

Ovalt's R/C Speedshop, 3920 N. U.S. 31 S., Traverse City, MI 49684. Jim Ovalt. (616) 947-6670

FOCUS

R.A.C.E. Inc., 3227 Mathews, Jackson, MI 49203. Sam Sprang. (517) 787-9161

FOCUS

Raw Roots Race Tracks, 14623 East Croswell, 1/4 mile north on 152nd (off U.S. 31), West Olive, MI 49460. Roy Bennink. (616) 399-9338

FOCUS

R&L Hobbies & Racing, 9782 Portage Rd., Kalamazoo, MI 49002. Rex Simpson. (616) 323-3686; fax (616) 329-1744

FOCUS

Rodgers R/C Raceway, 7463 Ridge Rd., Britton, MI 49229. George Rodgers. (517) 451-8301

FOCUS

Superior R/C Raceway, 160 S. County Road 553, Lot 173, Gwinn, MI 49841. Frank Feister. (906) 346-7225

FOCUS

Thumb Raceway, 3441 Main St., Marlette, MI 48453. Jim Wilson. (517) 635-7848

FOCUS

Vicksburg Off-Road R/C Raceway, 50201 Silver St., Vicksburg, MI 49097. Tim. (616) 323-7963

FOCUS

T.J.'s RC Raceway, Rt. 2, Box 22C, Luther, MI 49656. Tod Smant. (616) 797-8035

FOCUS

Village Hobbies-n-Crafts, 195 N. Elm, Hesperia, MI 49421. Alan or Fran. (616) 854-1374

FOCUS

Village R/C Raceway, Prairie Ronde St., Decatur, MI 49045. Chuck Nolke. (616) 423-7878

FOCUS

Washtenaw R/C Raceway, Ypsilanti, MI 48198. Jim Rousseau. (734) 395-5048

FOCUS

Willis Outdoor R/C Racetrack, 13922 Oakville-Waltz Rd., Willis, MI 48191. Mike Higgins. (734) 587-2012

FOCUS

MINNESOTA

Bemidji R/C, 1015 Miles Ave. S.E., Bemidji, MN 56601. Russ or Ryan. (218) 751-1629

FOCUS

Car Town USA, 2822 Piedmont Ave., Duluth, MN 55811. Roger Deloach. (218) 727-6248

FOCUS

Central RC, 1620 Central Ave., Minneapolis, MN 55330. Doug Ringold. (612) 781-1640

FOCUS

Country R/C Raceway Park, 24214 325th St., Belview, MN 56214-8115. Charles L. Steff. (507) 641-8115

FOCUS

Duey's Hobbies & R/C Raceway, 6600 Cahill Ave., Inver Grove Heights, MN 55076. Duey Carlson. (612) 450-1721

FOCUS

Grand Rapids R/C Speedway, 2209 Hwy. 2 East, Grand Rapids, MN 55744. Aaron Voges. (218) 326-6751

FOCUS

Granite City R/C Speedway, 3555 Shadowwood Dr. N.E., East Hwy. 23, Sauk Rapids, MN 56379. Brett Donahue. (320) 251-6980

FOCUS

J's Radio Control Race Park, 22994 290th Ave., Starbuck, MN 56381. Jay Campbell. (320) 239-4827

FOCUS

Kevin's Private Off-Road Raceway, 702 So. Washington Ave., Crookston, MN 56716-2317. Kevin Altepeter. (218) 281-7523. email: kevinles@rrv.net; (note: registration required for permission of use)

FOCUS

Northwoods Hobby Raceway, 2638 Hwy. 25 North, Brainerd, MN 56401. Tom Grogg. (218) 829-9257

FOCUS

Ray's Raceway Park, 105 3rd Ave. NE, Glenwood, MN 56334. Dan Winter. (320) 634-5246

FOCUS

R/C Racing World, 235 Main Ave. North, Harmony, MN 55939. Mark McKay. (507) 886-5931 or (507) 886-2224

FOCUS

Red Barn RC Raceway, Rt. 4, Box 333, Mankato, MN 56001. Rusty Weiss. (507) 345-8972

FOCUS

Southside Speedway, 2241 Marion Rd. SE, Rochester, MN 55904. Kevin Guy. (507) 281-3233

FOCUS

Sport Zone RC Race Park, 32339 Harris Town Rd., Grand Rapids, MN 55744. Greg. (218) 326-8956

FOCUS

Time R/C Raceway, 20 West Lake St., Chisholm, MN 55719. RV. (218) 254-4321

FOCUS

MISSISSIPPI

Joe McFadden Hobbies, 5531 Fox Meadow Dr., Meridian, MS 39307. Joe McFadden. (601) 483-7000

FOCUS

Small Cars Unlimited, 820 Cooper Rd., Jackson, MS 39212. (601) 372-FAST; www.smallcarsunlimited.com

FOCUS

MISSOURI

All Seasons Hobby, 29 O'Fallon Square, O'Fallon, MO 63366. Bob Daniels. (314) 281-8767

FOCUS

B&L Hobbies & Raceway, 2800 Anchor Dr., Park Hills, MO 63061. Bob Marler. (573) 431-9444

FOCUS

Fire Mountain Raceway, 8647 Commercial Blvd., Pevety, MO 63070. Dan Gordon. (314) 475-6449

FOCUS

Greentree R/C Racepark, St. Louis Dirt Burners R/C Club, Marshall Rd., Kirkwood, MO. (314) 831-2194

FOCUS

Hobbies 'N Stuff Raceway, 204 Mall Pkwy., Wentzville, MO 63385. Tim Satchwell or Crandall Olds. (314) 327-6006

FOCUS

North Missouri Raceway, 223 Graves St., Chillicothe, MO 64601. Billy Johnston. (660) 646-1120

FOCUS

Novelty R/C Raceway, Rt. 1, Box 132A Novelty, MO 63460. Rex or Jena. (660) 739-4546; email: rexjen@marktwin.net

FOCUS

Ozark Mountain Speedway, Rt. #2, Box 50, H-Highway and County Rd. 31, Noel, MO 64854. Clayton Younker. (417) 475-6222

FOCUS

Ozarks R/C Raceway, Hwy. 13N, Brighton, MO 65781. Gene Rhodes or Ron Hawkins. (417) 742-4376 or (417) 742-7223

FOCUS

Real Blue Vue Speedway, 12019 E. 47th St., Kansas City, MO 64133. Mark Randol. (816) 358-0238

FOCUS

Real R/C Raceway, 24204 State Rt. 58, Pleasant Hill, MO 64080. Steve Hale. (816) 540-5584

FOCUS

MONTANA

Stormer Raceway & Slot Motorplex, P.O. Box 126, Hwy. 2 East, Glasgow, MT 59230. (406) 228-4569

FOCUS

NEBRASKA

Goodyear Speedway and Off-Road, 4021 North 56th, Lincoln, NE 68510. Tom or Bob. (402) 464-5172

FOCUS

Hader R/C Raceway, 55192 849th Rd., Norfolk, NE 68701. John Schoenauer. (402) 644-7922

FOCUS

Hobby Town USA Raceway, N. 1st St. & Cornhusker Hwy., Lincoln, NE 68508. Ben Smith. (402) 434-5056

FOCUS

Mr. Bill's, 450 West 2nd St., Hastings, NE 68901. Bill J. Ries. (402) 462-4865

FOCUS

O.N.R.O.A.D., 3307 N. 58 St., Omaha, NE 68104. Cook Jacobs. (402) 556-8674

FOCUS

OTWG Carpet Raceway, 55129 849th Rd., Norfolk, NE 68701. John Schoenauer. (402) 644-7922

FOCUS

RC Motorsport Off-Road Raceway, 5600 Mass Rd., Papillion (Omaha), NE 68133. Marty Stepanek. (402) 593-6133

FOCUS

Salvation Army South Corps, 4032 Harrison St., Omaha, NE 68164. (402) 734-3414; fax (402) 734-3415

FOCUS

T & T Raceway, 476 26th Ave., Columbus, NE 68601. Tom. (402) 564-9216

FOCUS

The Speed Zone, 1524 Atokad Dr., South Sioux City, NE 68776. Rob Murdock. (712) 428-4679. or Jim Carson. (712) 274-7731

FOCUS

Wacha's R.C. Speedway, 1823 23rd St., Columbus, NE 68601. Tom Smith. (402) 564-9216

FOCUS

NEVADA

Bill's Hobby Shop, 1000 N. Nellis Blvd., Las Vegas, NV 89110. Bill Schultz. (702) 531-3282; website: www.billshobbyshop.com

FOCUS

Dansey's Indoor R/C & Hobbies, 741 N. Nellis, Las Vegas, NV. David Lugo. (702) 453-RACE. (888) 675-8963; www.danseys.com

FOCUS

Lizard Raceway, P.O. Box 1248, Verdi, NV 89439. Jeff Griffin. (702) 345-6573

FOCUS

NEW HAMPSHIRE

Axis Racing R/C Dragway, 4197 High St., Exeter, NH 03833. Dan Peterson. (603) 659-4877

FOCUS

Economy R/C Speedway, 4 Maple St., Winchester, NH 03470. Harold Thomas. (603) 239-4482 or 239-6470

FOCUS

North Haverhill R/C Racing, Main St. N. Haverhill, NH 03774. Shelly White. 111 Golf Links Rd., Wells River, VT 05081. Todd White. (802) 757-2579

FOCUS

Robert's Railroad & Hobbies, 1335 1st NH Turnpike—Rt. 4, Northwood, NH 03261. Robert M. Jeffers Jr., (603) 942-5193

FOCUS

RT 106 Racepark, 743 Clough Mill Rd., Pembroke, NH 03275. Fred Farwell. (603) 224-RACE

FOCUS

NEW JERSEY

American Raceway, 142 Wilson Ave., Elizabethtown, NJ 07726. Doug Venner. (732) 446-3737; email: DMCT2@prodigy.net

FOCUS

America's Hobby Center Inc., 8300 Tonnelle Ave., North Bergen, NJ 07047. John Many. (201) 662-0777

FOCUS

Checkerboard Raceways, P.O. Box 240, Elwood, NJ 08217. Ray Murray. (609) 629-4809

FOCUS

Family Hobbies Raceway, 3576 N.W. Blvd. & Weymouth Rd., Vineland, NJ 08360. Linda Vogel. (609) 696-5790

FOCUS

Jackson R/C Racing, P.O. Box 565, Christopher Columbus Blvd., Jackson, NJ 08527. Al Sodano. (732) 364-6422. or Ed. (732) 928-8963

FOCUS

Jefferson Speedway, 5494 Berkshire Valley Rd., Oak Ridge, NJ 07438. (201) 697-7525

FOCUS

Jerry's Hobby Center & Raceway, 336 Rt. 22W, Greenbrook, NJ 08812. Jerry or Gary. (908) 752-6030

FOCUS

LBRA Track, 392 Warburton Pl., Long Branch, NJ 07740. (908) 222-5122

FOCUS

Millville R/C Oval, 114 N. High St. Millville, NJ 08332. William Denstoz. (609) 327-4640

FOCUS

On Trax Hobbies, 3101 Rte. 70, Browns Mills, NJ 08015. Joseph DiGirolamo. (609) 735-0422

FOCUS

South Jersey Cost Controlled Racing, 25 Jackson Ln., Sicklerville, NJ 08081. Ray Murray. (609) 629-4809

FOCUS

The Race Place, 1151 Hwy. 33, Farmingdale, NJ 07731. John Fary. (908) 938-5215

FOCUS

NEW MEXICO

Charlie's Hobby Shop, 225 E. Idaho, Ste. 11, Las Cruces, NM 88005. Kim. (505) 541-1097

FOCUS

Las Cruces R/C Racer's Association, Meerscheid Recreation Center, Walnut and Hadley by BM

Goldtrax Raceway, 409 E. High Lead, SD 57754; Steve Brown, (605) 584-2355



Tri-State R/C Club, Sioux Empire Fair Grounds, Sioux Falls, SD 57105; Chad Walth, (605) 357-9654; email: losi-man@email.msn.com



R/C Action Raceway, SE Corner at 484th & Hwy. 38, Sioux Falls, SD 57105; Brian Cox, (605) 373-0511



TENNESSEE

D&M's Downtown Raceway, 2703 U.S. Hwy. 411S, Maryville, TN 37303; (423) 681-8919



Futrell's R/C Hobby Shop, 1715 Jackson Ave., Seymour, TN 37865; Dan Futrell, (423) 908-9526



Hobby Town USA, 2000 Mallory Ln., Franklin, TN 37067; Bobby Mills, (615) 771-7441



Interstate Raceway, 5237 Highway 126, Blountville, TN 37617; Dale or Mark, (423) 323-1513; mkstarnz@intermediat.net



MID-South Racing Association, 9155 Hwy. 72 (Poplar Ave.), Germantown, TN 38138-7903; (901) 757-8774



MSA Racing, 120 Village Way, Crossville, TN 38555; D.R. Findley, (931) 456-0027



R & R Racing Portable Track, RR3, Box 34, Linden, TN 37096; Ross or Ron, (931) 589-5433



TnT Raceway, 643 Loop Hollow Rd., New Tazewell, TN 37825; Cliff Swett, (423) 869-8942



W.O.W. Raceway, 59 Luray Rd., Beech Bluff, TN 38313; Kelly Bean, (901) 427-7874; email: windx60@pipeline.com



TEXAS

215 Speedway, 1814 County Rd. 215, Abilene, TX 79602; Clyde Gardner, (915) 673-2351



B&B R/C Hobbies, 700 East 4th, Big Spring, TX 79720; Walter Bumbulis, (915) 263-1790



Big Mike's R/C Raceway, 1405 W. Cotton St. (behind the Locker Room), Longview, TX 75604; (903) 297-7814



Comanche Trail RC Park, City Park, Big Spring, TX 79720; Allen Nichols, (915) 263-4241



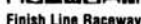
Discount Hobbies, 1722A West Anderson Loop, Austin, TX 78757; Tony Bermudez, (512) 458-2324



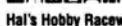
Drycreek Raceway, 5903 Co. Rd. 2297, Quinlan, TX 75474; Micky Alphin, (903) 883-4060



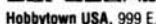
Eastex Raceway, 45000 Hwy. 59 N., New Caney, TX 77357; Brent Mahaffy, (713) 399-9777



Finish Line Raceway, 2775 N. Hwy. 360, Ste. 637, Grand Prairie, TX 75050; Steve Manning, (817) 652-3340



Hal's Hobby Raceway, 1440 Bessemer, El Paso, TX 79936; (915) 591-2213



Hobbytown USA, 999 E. Basse Rd., Ste. 177, San Antonio, TX 78209; Joe Sena or Clark Baisdon, (210) 829-8697; fax (210) 829-8707



Hot Rod's Raceway, 4218 Boston Ave., Lubbock, TX 79413; Rodney, (806) 797-9964



Issac's Race Track, 18177 Gult Fwy., Houston, TX 77598; Issac Ben-Ezra, (281) 488-8697



MBRC Off-Road Raceway, 204 D&E Valley Ln., Kennedale, TX 76060; Mike Battelle, (817) 563-1900



Mammoth R/C Racing, 4221 Spencer, Pasadena, TX 77504; John, (713) 946-2522



Mike's Hobby Shop Superstore and Raceway, 1605 Crescent Cir., Carrollton, TX 75006; (972) 242-4930; www.mikeshobbyshop.com



Performance Raceway, 1106C Witte Rd., Houston, TX 77055; Jorge or Terry, (713) 464-4458



Rev It Up Raceway Practice Track, 3076 Keller Rd., Smithville, TX 78957; Rev. Alton T. Edwards, (512) 237-5903



Rick's R/C Raceway, 238 Scenic Loop, Boerne, TX 78000; Rick, (210) 981-2245 or Rich, (210) 590-1805



Star/Car Raceway, 5802 Patton St., Corpus Christi, TX 78415; Glen Stead, (512) 949-8525; Race Hotline, (512) 881-6105



T&T Eagle, 3420 Ave. K., Suite 154, Plano, TX 75074; Joe Sullivan, (972) 633-2470



Texas Speedway, 67073 Chimney Rock, Bellaire, TX 77401; (713) 661-7137; www.i-hobby.com



T.O. Offroad Raceway, 6236 Quail, El Paso, TX 79924; Eren Saenz, (915) 821-7522



Warehouse Radio Controlled Raceway, 5119 Plains Blvd., Amarillo, TX 79101; Craig or Darren Waddell, (806) 356-9080



W.E.S. Hobby Race, 980 S. Fourth St., Beaumont, TX 77701; Edmond Richards, (409) 839-4929



UTAH

Intermountain R/C Raceway, 8481 W. 2700 S., Magna, UT 84044; David Mott, (801) 250-8303



Hobby Haven Raceway, 450 W. Coal Creek, Cedar City, UT 84720; Ryan, (435) 586-7316



Payson R/C Raceway, 955 S. Main, Payson, UT 84651; Gus Wood, (801) 224-3852 and Lasca Wood, (801) 222-8677



Vision Hobby, 352 N. State St., Orem, UT 84057; Ken Rice, (801) 226-6226



WOR R/C Raceway, 3170 Brinker Ave., Ogden, UT 84401; Brian Worton, (801) 393-2530



VERMONT

Barre Town R/C Club, 14 S. Main St., Wall St. Complex, Barre, VT 05641; Russ or Pete, (802) 888-2860 or (802) 476-9458



Bradford R/C Racing, Main St., Bradford, VT 05033; Seth Bean, (802) 222-9674



Empire Hobbies Off-Road Raceway, 272 North Main St., Saint Albans, VT 05478; Scott or Jen; (877) 4-HOBBIE; email: mprhobe@togethr.net;



Stoughton Pond Raceway, Stoughton Pond Rd., Perkinsville, VT 05151; Rick Adams, (802) 263-9321



VIRGINIA

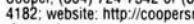
Brad's Hobbies, 1105 Greenville Ave., Staunton, VA 24401; Brad, (540) 885-3642



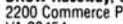
Brown Brothers Hobbies, 924 N. Main Street, Dumfries, VA 22026; Joel or Bob Brown, (703) 221-5746



Cooper's R/C Race Center, 4000 Sago Rd. (969), Chatham, VA 24531; Norris Cooper, (804) 724-7342 or (804) 724-4182; website: http://coopersrc.virtuale.net



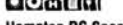
DRCW Raceway, Debbie's RC World, 2200 Commerce Pkwy., Virginia Beach, VA 23454; Les Modlin, (757) 340-6681



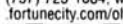
Gloucester Scale Hobbies, 2352 George Washington Memorial Hwy., Hayes Plaza, Hayes, VA 23072; Rob Theirn, (804) 642-3484



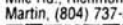
Hampton RC Speedway, 1920 E. Pembroke Ave., Hampton, VA 23663; Steve Long or Mickey Kern, (757) 723-1884; website: www.fortunecity.com/olympia/norman/26/



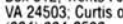
K & W Hobby and Sports, 5186 Nine Mile Rd., Richmond, VA 23223; Ross Martin, (804) 737-3904



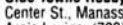
KC's Radio Control & Repair, Rt. 4, Box 312, Trents Ferry Rd., Lynchburg, VA 24503; Curtis or Kim Wright, (804) 384-8596



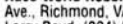
Olde Towne Hobby Shoppe, 9105 Center St., Manassas, VA 22110; Arnie Levine, (703) 369-1197



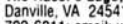
Race World Hobbies, 6102 Lakeside Ave., Richmond, VA 23228; Larry Boyd, (804) 553-8040



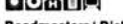
The Racer's Edge, 1230 West Main St., Danville, VA 24541; Al Harville, (804) 792-6011; email: webmaster@theracersedge.virtuale.net; http://theracersedge.virtuale.net



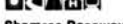
Roadmasters/Rick's Hobbies, 12201 Balls Ford Ave., Manassas, VA 22110; Rick, (703) 330-6833



Shamrock Raceway, 106 Cheviot Pl., Stephens City, VA 22655; Scott Janow, (540) 869-3551; note: track is located in Winchester, VA



Thunder Road RC Racing, P.O. Box 1022, Troy, VA 22974-1022; James Palmer, (804) 589-8174



The Tiltyard, 6994 Tiltyard Dr., Dayton, VA 22821; (540) 828-3476; www.tiltyard.com; tiltyard@rica.net



Trainlano R/C Racing, 5661 Shoulders Hill Rd., Suffolk, VA 23435; Frank Stevens, (757) 488-5454



WASHINGTON

A-Main Raceway, 14011 N.E. 3rd Ct., Vancouver, WA 98685; Monty Coleman, (360) 571-8404



Bear Creek Raceway, 6319 Maltby Rd., Woodinville, WA 98072; Nathan Brockway, (425) 398-0140



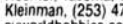
Burien Toyota R/C, 15025 1st Ave. South, Seattle, WA 98148; Ray Meek, (800) 654-6456



Cedardale Raceway, 1673 Cedardale Rd., Mount Vernon, WA 98273; Joe Madonia, (360) 659-0072; email: getchell@halcynon.com



Fantasy World Raceway, 7901 S. Hosmer, Tacoma, WA 98408; Dave Kleinman, (253) 473-6223; www.fantasyworldhobbies.com



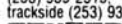
Four Seasons R/C Racing, 2941 Sleater Kinney Rd. N.E., Olympia, WA 98506; Gary and Sharon Brown, (360) 491-2430



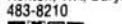
Hank Perry Raceway, 1901 N. Sullivan Rd., Spokane, WA 99023; Thom Mullins, (509) 928-2009



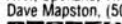
Race City, 125 E. Main St., Auburn, WA 98002; Craig Haslebach, (253) 939-2515



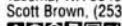
SARCAR Club, 700 Renton Village Pl., Renton, WA; Darylene Dennon, (425) 483-8210



Spokane Indoor Raceway, 6422 E. 2nd Ave., Spokane, WA 99212; Dave Mapston, (509) 534-RACE



Tacoma R/C Raceway, 6305 6th Ave., Tacoma, WA 98406; Scott Brown, (253) 565-1935



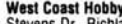
Rain City RC Raceway, 3616 South Rd., Suite A-3, Mukilteo, WA 98275; Peter, Andrew or Debbie, (425) 438-2454; ibausser@gte.net; www.raincityraceraceway.com



Ultimate R/C Raceway, 907 Cole St. #3, Enumclaw, WA 98022; Dan Daugherty, (360) 802-2388



West Coast Hobby & Raceway, 2239 Stevens Dr., Richland, WA 99352; Darren Shank, (509) 375-4995



Zep's Hobbies & Raceway, 530 Interlake, Moses Lake, WA 98837; Steve Ralph, (509) 765-8191



WEST VIRGINIA

Burr-Fab Raceway, 90 Davis St., West Union, WV 26456; Mark Travis, (304) 873-2487



Fulton's R/C Raceway, 2646 Chapline St., Wheeling, WV 26003; James Fulton, (304) 233-5355



Left Turn Hobbies, 100 Saco Ln. (by Post Office), Glen White, WV 25849; Stretch, (304) 255-3930

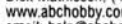


Race Zone, Hopewell Rd., Rt. 8, Box 343A, Fairmont, WV 26554; Joe Clutter, (304) 368-1000



WISCONSIN

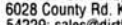
ABC R/C Inc. & Raceway, 244 W. Main St., Waukesha, WI 53186; Dick Mathiesen, (414) 542-1245; www.abchobby.com; email: help@abchobby.com



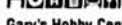
Best's Hobbies, 2700 West College Ave., Appleton, WI 54914; Peggy, (920) 734-5244



Dirt Heaven Hobby and Raceway, 6028 County Rd. K, New Franken, WI 54229; sales@dirtheaven.com; www.dirtheaven.com



Gary's Hobby Center, 3701 Durand Ave., Racine, WI 53403; Bill Phalen, (414) 554-8884



Hobbytown USA - Revolution, Memorial Mall, 3347 Kohler Memorial Dr., #D2, Sheboygan, WI 53081; Kenny, (920) 452-0801



Mid-West Tri-Clone, 3745 Shuster, West Bend, WI 53095; Tom Holz, (414) 334-0429



Pro-Star Racing, 726 Pine St., Green Bay, WI 54301; Chuck, (920) 494-1233 or Terry, (920) 469-5566



Revolution Raceway, Memorial Mall, 3347 Kohler Memorial Dr., #D2, Sheboygan, WI 53081; (920) 452-0801 or (800) 594-9420



R.J.S./R.C., 4920 Hwy 70W, Eagle River, WI 54521; Randy Stys, (715) 479-2541



S&N's Trackside Hobbies and Raceway, 6045 N. Green Bay Ave., Milwaukee, WI 53209; Scott Ernst, (414) 351-1910



WYOMING

Collectable Creations Off-Road Oval Track, 1790 Dell Range Blvd., Cheyenne, WY 82009; Phil Severson, (307) 632-2156



Templestowe Flat Track Racers.
Templestowe Reserve, corner of Porter St. and Williamsons Rd., Templestowe, Melbourne, Victoria 31066;
Renato Benci, 61 (3) 9553 4625

Woe Waa's Offroad RC, KYEEMA.
Burien Junction, N.S.W. 2386; Shane, 61-02-6796-1339

Wodonga R/C Car Club, 11 Murphy St., Wodonga, VIC 3690;
Ron Langman, 61-60-247-128

AUSTRIA

RM-C-Wien, Aspernstrasse 5, Vienna, A-1220; Herbert Holze/Martin Hrzak, +43-664-4730376

BELGIUM

ATR-Alka-Tele-Racing, 3570 Stationstraat 21, Alken Limburg; 0032-11-25-49-03

Cartroubles Indoor Buggy Track, Jan Moonsstraat 52-56, 2160 Wommelgem; Guy Ermes, 32-3-326-51-15; fax 32-3-326-51-01

MBV-Kampenhout, Teniersln 28, Kampenhout B1910; Frank Mostrey, phone/fax 0-16-65-75-18

MRCZ, Centrum, De Burg; Montie, 75-71-63

Model Racing Club Oudenaarde, Scheldekant, 9700 Oudenaarde; A. Chanterle, 32-55-31-36-48; fax 32-55-30-19-12

R.C.R., Peilstraat 43, Retie 2470; A. Eelen, phone/fax 32-14-379685

BRAZIL

Amoc Associação de Modelismo B. Cambario, Junto ao Par Que Ecologico de Bal. Cambario, Bal. Cambario, S.C. 88.330-000; Leo Cesar, (047) 366-0001

Brasilia R/C Motor Circuit, Estacionamento do Estadio Mane Guarrinha, Brasilia, DF 70000; Alexandre (Alex), 55-061-273-7205

C.A.A.R. Curitiba Associacao de Automodelismo Radiocontrolado, Rua Theodoro Makioka, 2300 Santa Candida, Curitiba, PR 82650-530; Ronaldo Assumpcao, 55-41-354-2804

Electric Car Club R/C Santos, Av. Bernardino de Campos, 227, Santos, SP 11065-001; Estevam or Arnaldo, 55-013-232-2536

Hamilton Nelo Associacao RC, Rua Uterere 259, Curitiba, Paran 80380-400; Danico Pilhax, 55-41-338-8041; hammer_usa@hotmail.com

Hobby Center, SQS 210 BI H Apt. 204, Brasilia, DF 70 273; 061-242-0488

Hobby Planet Racing Club, Rod Dom Pedro 1, KM 1315, Campinas, Sao Paulo 13091901; Daniel, Helio, Luciano, 019 258 2768

Jungle Drive, Rua Alberto Maranhao, No. 219 Icha do Gov. Rio de Janeiro, 21940-490; Paulo Brito, (021) 396-0851 or (021) 393-7449

MP Raceway, Av. Nacoes Unidas, 6815 Lapa, Sao Paulo; Gerd Heitrotter, 55-11-9819039; www.hpraceway.com.br

Off Roaders, Av. Guillermo Dummont Villars, 317, Sao Paulo, CEP 05640; Waldir Ielpo, (055) 011-260-5628; fax (055) 011-831-4931

Way of R/C Off-Road Cerrado, Rua Paraita 1323, 1st floor, Belo Horizonte, Minas Gerais; Claudio T. Correia, (031) 227-6111; fax (031) 227-6869

CANADA

Action Weelz, 462 Turcotte, Vanier, Quebec, G1M 1R6; Regent Tardif, (418) 527-5756

Advance R/C Raceway, 4181 Sheppard Ave. E., Scarborough, Ontario M1S 1T3; Albert Lau, (446) 321-8377

A&J Toronto R/C Raceway, 24 Main St., Bldg. B, Unionville, Ontario L3R 2E4; (905) 305-1479

The All New R.C. World, 2633 Hwy. #6, Mt. Hope, Hamilton, Ontario L0R 1W0; Dave, (905) 765-2301, Larry, (905) 333-3297 or Brian, (519) 752-0044

ATN, Auto Teleguide Nicolet, 2000 Rue Paul Hubert, Saint-Jean-Baptiste-de-Nicolet, Quebec J3T 1E5; Louis Durand, (819) 293-6097

Auto Sprint, 6065 Des Grands Prairies, St. Leonard, Quebec H3G 2R6; David Kalayian, (514) 287-3503

Blew Bye You Raceway, 134 Dike Rd., Chilliack, British Columbia V2P 5B1; (604) 792-8978

Circuit J.C., 1283 Chemin, St. Philippe, St. Polycarpe, Quebec JOP 1X0; Jean Castellan, (514) 265-3675

Circuit Pepsi, Centre de Location, 37 du Roi, Sorel, Quebec; (514) 746-8828

Circuit Plessis, 260 Rang 9 Ouest, Plessisville, Quebec G6L-2Y2; (819) 362-3743

Circuit R/C Pro, 1500 Chemin Sullivan, Val d'Or, Quebec, J9P 1M1; R/C Modeler Plus, (819) 874-3918

Circuit Teleguide St. Roch, 363-B St. Charles, St. Roch De L'Achigan, Quebec J0K 3H0; (514) 588-4254, fax (514) 588-6554

Circuit Teleguide Grand Prix II, 701, Sainte-Rose, Ste. 200, Laprairie, Quebec, J5R 1Z2; (450) 444-1286

Club Auto Teleguides, 1750 Mlee Interprovince, C.P. 35, Pointe-Fortune, Quebec, JOP1N0; Jacques St. Alevis, (514) 451-0078

Club Avatt, 244 Jules-Richard, Deauville, Quebec JIN 3; Daniel Vanier, (819) 864-6262

Club RCSI, 44 Rue Holliday, Sept-Iles, Quebec G4R; Sylvio Gerard, (418) 968-6575; Hobby Shop, (418) 962-6565

CRCCC, Box 309, Clinton, Ontario NOM 1L0; Eric Russell, (519) 482-9429

CTG, 450 Chemin de la Grand Ligne, Granby, Quebec; (514) 358-4419

CTL, 495 Industriel, Longueuil, Quebec; (514) 358-4419

Duststickers R/C Raceway, 1785 Cypress Rd., Quesnel, British Columbia V2J 4B1; Darrell Dinsdale, (250) 747-2680

Dynamic Hobbies, 21 Concourse Gate, Unit 6, Nepean, Ontario K2E7S4; Clark Freeman, (613) 225-9634

East Coast Model Center Raceway, 13 Glen Stewart Dr., Ste 1, Southport, Prince Edward Island C1A 8X9; Gary Stephen, (902) 569-3262

Fast-Trax Speedway, RR 4, Trenton, Ontario; Russ McPeak, (613) 394-6411

Fly'n Bryan's Radical Raceway & Little Shop of Hobbies, RR #1, Ste. 12, Comp. 49, Chase, British Columbia V0E 1M0; Bryan Coffey/Dani Potvin, (604) 955-0669

Gilles Comtois, 1458 Boul. Lafleche, Bale-Comeau, Quebec G5C 1E1; (418) 295-1830

Hobby 2000, 75 St.-Jean-Baptiste, Ste 140, Chateauguay, Quebec J6J 3H6; Hugues-Andre Meloche, (450) 698-2000

Honda House Motor Speedway, 384 Richmond St., Chatham, Ontario N7M 1P9; John Elliot, (519) 354-5530

Interior R/C Raceway, 34-1605 Summit Dr., Kamloops, BC, V2E 2A5; Martin Vannieuwenhuizen, (604) 374-1268 or (604) 374-8458

J-T International Raceway, 127 Milligan Ln., Napanee, Ontario K7R 8A1; N. O'Neill, (613) 354-0099

Leading Edge R/C Speedway, 731 Gardiners Rd., Kingston, Ontario K7M 3Y5; Mike and Tony Daicar, (613) 389-4878

Mid-Canada R/C Speedway, 216 Hutchings, Winnipeg, Manitoba R3H 0L3; Richard Driedger, (204) 339-6566

Miniatures & Passions, 204 St. Charles, #103, Ste. Therese, Quebec J7E 2 B4; Gilles Lachance, (514) 979-7989

MORRAC Raceway, 6449 Crowchild Tr. S.W., Box 36060, Calgary, Alberta T3E 7C8; (403) 254-1386

Off-Road R/C Raceway, 76 Eddystone Ave., North York, Ontario M3N 1H4; Ron Lefebvre, (416) 740-0536

Prince George Radio Controlled Car Club, 202 Explorer Cres., Prince George, B.C. Y2M5R8; Doug Waller, (604) 561-0035

Quintrax Speedway, 610 Dundas St. East, Belleville, Ontario K7K 2M1; (613) 962-1414; fax (613) 962-7306

Randy Shantz Raceway, 1015 W. 14th St., North Vancouver, British Columbia; Steve Mulhall, (604) 945-3888

R/C Champ Raceway, 670 Progress Ave., Rear Unit #13-16; Scarborough, Ontario M1H 3A4; Ben, Matthew or Louie, (416) 289-8717

Recreation R/C Raceway, Hwy. 16 and Ferry Ave., Prince George, BC; Doug Waller, (604) 561-0035

Ronbo's R/C Racing, R.R. #1, Glen Walter, Cornwall, Ontario K3H 3G4; Ron Giroux, (613) 936-0176

Rousillon Hobby Track, 177-D St. Jean Baptiste, Chateauguay, Quebec J6K 3B4; (514) 698-2151

Shadetree Raceway, R.R. #4, 22566 Stage Rd., Thamesville, Ontario; Darrin Charbonneau, (519) 692-5211

Snye Wreck RC, R.R. #1, St. Regis, Quebec H0M 1A0; Aimee Mitchell, (613) 575-2496

South Muskoka R.C. Track & Mini Putt, 8903 Hwy. 11, Orillia, Ontario L3V 6H3; Justin, (705) 329-0397

Spinnin Wheel Raceway, RR 1, Ariss, Ontario N0B 1B0; (519) 824-1614

South Okanagan Roadhogs, Skha Lake Rd., Penticton, BC; Willie Lemm, (604) 492-5698

Steeletown Speedway, 3580 Kirk Rd. West, Binbrook, Ontario L0R 1C0; Paul Snyder, (905) 227-7508

Sudbury Organized Auto Racing, 765 Barrydowne Rd., Sudbury, Ontario P3A 3T6; Ken Moore, (705) 524-5339

Thunder Alley Raceway, Lambton Mall, 1380 London Rd., Sarnia, Ontario N7S 1P8; Rob Smith, (519) 882-3361

Vancouver R/C Road Racers, #100-2733 Barney Hwy., Coquitlam, British Columbia V3E1K9; Roger Brown, (604) 945-3888

COLOMBIA

Club De Automodelismo Colombiano, Centro Recreativo Cafam, Kilometro 14 Autopista Norte, Santafe De Bogota, D.C.; Jorge Delgado, 1-6130588

Club De Automodelismo Colombiano, Centro Comercial Guaymaral, Kilometro 16 Autopista Norte, Santafe De Bogota, D.C.; Jorge Delgado, 1-6130588

Garosa Raceway, Avenida Libertadores con Diagonal Gran Colombia, Cucuta; Gabriel Rodriguez, 975-751892

CYPRUS

Racing Model Club, Kennedy Ave. N. 42, Nicosia; Andrea Sotiriou, 493186; fax 493229

DENMARK

Brondby Motor Club, Roskildevej 460 Brondby 2605; Soren Boy Holst, 45-36-472-462

Holstebro R/C Buggy Club, Mozartsvej 7500 Holstebro 2600; Michael Brushoff, 45-97-412-734

Klub 144 Raceway, Bagsvaerdvej 144A, 2800 Lyngby; Henrik Carstens, 45-42-88-3691

Rainbow Raceway, Eriksvej 9 Glostrup, Copenhagen 2600; P. Christiansen, 45-52-848-504

Thor Minirace Odense, Sohusevej 255, Alleso, Odense, behind Alleso Hallen (Sport Centre), Odense; Ulrich Rasmussen, 45-65-303-707

DOMINICAN REP.

Adoca R/C Speedway, Feria Ganadera, Santo Domingo; (809) 220-5266

La Barranquita R/C International Speedway, Santiago; (809) 582-2303

ECUADOR

Hobby Centro A.C.R.D. Club, Via a Turi Km 0 S., Cuenca-Ecuador; Teddy Jaramillo, 593-7-831-289; fax 593-7-817082

ENGLAND

Chessington Radio Car Club, Surbiton Sport Club, Riverhill Estate, Worcester Park Rd., Worcester Park, Surrey; Ian Spiller, 0252-20657

Hampshire Racing Center, Viabes Craft Center, Basingstoke, Hampshire; Tony Eudola 44-1276-61402

Hinckley RCCC, Three Pots Inn, A5 Watling St., Hinckley, Leicestershire; Bruce, 01455-895080

Worcester Model Car Club, Christopher Whitehead High School, Bromwich Rd., St. John's, Worcester WR2 6Q9; Mr. Hardy

FRANCE

Auto Model Club de l'ouest, 45 rue de Menez, Lojheret 29470; Peuzat Michel, 02-98071764

Auto Electron, 35, rue B. de Ventadour, Limoges 87000; M. Boudoul, 55 062763

Crame Roncq, 64 rue du Becquerel, 59370 Mons el Baroeul; Michael Hondekyn, 33-20042755

CSRM, 17 Grande Rue Ave., de Saint-Rambert, 69009 Lyon; Pierre-Yves Monfroy, 06 78880852

Lorgies Bolides, rue Beau-Riuz, 62840 Lorgies; Mme. Hourdequin Sabine

GERMANY

Dreykorn Raceway, Heuchlinger-Hauptstr. 43, Lauf, 91207; Hermann Hensel, 09123-81457

MC Koln, Bottgerstr., Worringen 50769; Ralf Habel, 02733-477493

Mini Car Club Dortmund, Kortschstr. 4, 4600 Dortmund 13; Roland Schwan, 0231/213609

Oberhausen-Altstaden, Am Fesder-turm, Oberhausen 46099; Josef Hohl, 0208-403676

Panik Raceway, Teutonen Str. 5, Troisdorf 53844; Guido Kraft, 0224-400259

GREECE

EDRA-Fanatix Racing, 20 Iirinis Ave., Pefki, Athens, 15121; P.O. Box GK, Agana; Robert (Buddy) Simpkins, (671) 477-3207

GUAM

R/C International Raceway, P.O. Box GK, Agana; Robert (Buddy) Simpkins, (671) 477-3207

HONDURAS

Autodromo Accion, Quinta Santa Maria, San Pedro Sula, Colonia Rivera Hernandez; Eduardo Hondal, (504) 52-2061

HONG KONG

ACO Racing Track, Mt. SS Cheng, M.W. Ping che, Fanling, (852) 2370-0723

Kingsville Buggy Arena, Wong Chung Yeung Village, Shatin, N.T.; Pak Yeung, (852) 607-0828

INDONESIA

1st Circuit, Kompleks Villa, Kalijudah Indah, Surabaya; 62-31-5681965

Cipaku Indah Speedway, J1 Cipaku Indah II/2, Bandung 40143; Cipaku Indah Hotel, Erwin Lewi, 62-22-218-228, fax 62-22-210-223

Karinda Off-Road R/C Car Model Circuit, Perumahan Bumi Karang Indah, J1 Karang tengah Rayam lebak bulus, Jakarta-Selatan 12440; Wiwid W. Soedarmadi, 62-21-7900878

Pondok Cabecircut, JL. Kunir No. 83, Pondok Cabe, Ciputat, Jakarta; Ali Agus Salim, 7403568-9; fax 7491533

Uno 168 Off Road Track, Wicaksono Suryatanto, Nginden Semolo War 42, Surabaya; 62-31-5675133; email: wsurya@sby.centrin.net.id

Sentul World Hobbies, Citeureup Bogor Jawa Barat; International Circuit Hilton Hartanto, lan Sentul International Sirkuit, KM 42 62-21-751-2439

ISRAEL

Irca Off-Road, Rahana:
Yaron Zafris, (972) 030549937

Nahshoneat, Abba Nile Silver Str. 64,
Haifa 32809; Golan Levy,
(972) 03936444 or (972) 04231252

ITALY

Associazione Modellisti Cossato,
via P. Maffei, Cossato 13014, Biella;
Zanellato Romolo, 015-405881;
fax 015-922709

JAPAN

Xiwakuni R/C Track, PSC 561, Box
978, FPO AP 96310-0978;
David T. Eck, 81-6117-53-3662

Yokota R/C Racers, PSC #78, Box
3889, APO AP 96326, Tokyo; Donnie
Leornas, 011-813-11-757-2012 or 001-
813-11-755-2272

Zama Off-Road Raceway, 17th ASGCM
Unit 45013, Box 3232, APO AP 96338;
SFC Ken Campbell, 81-3117-63-8478

KUWAIT

Inferno DX 4WD Track, P.O. Box 9167,
Ahadi 10002; Yousuf Acqatari

LEBANON

Wild Willy RCC, Oscar St-Jal Eddie,
Beirut, 00961-4-403751

MALAYSIA

Titilwangsa Raceway, Lot 128, Ampang
Park, Shopping Centre, Jalan, Ampang,
Kuala Lumpur 50450; R.A.C.E. Sdn
Bhd., 03-2614496

Jump Square Arena, A121, SG, Buloh
N/V, 47000, SG, Buloh, Selanhar
Thomson Chong, (603) 656-2513

MEXICO

Alces Off Road, Lopez Mateos y Rayod
S/N, Ensenada, Baja California, BC
22830; Jorge Bustamante,
667-6-1476, 61477, 86729

Baja Jr., H. Valdez 151 Pte. Y Gmo.
Prieto, Los Mochis Sinaloa 81200;
Memo Asencio, Gaby Macias,
681-20276; fax 681-26430

Club Kyosho de Automodelismo
Departino, Av. Pacifico 216 Coyoacan,
Ajusco-Toluca Km
15.3 DF 04330, Ing. Jorge Perez
Holder, 525-544-08096; fax 525-544-
7133

Cinamo Coca-Cola, Ruiz Cortines 620
Col. Central de Carga, Guadalupe, Nuevo
Leon 67120;
Sergio Garza, 83-35-70-09/79-32-33

Hobby Centro, 12 De Diciembre No.
3070-A, Guadalajara, JAL 45550;
Alejandro Ortiz Del Toro, 36-21-46-28

Hobby's Formula, Au observatorio 457
DF 01120; 905-502-3620

Hobby Model's Raceway, Blvd. Garcia
de Leon, 1555, Morelia, Michoacan
58260; 431-5-01-22

Jaguar R/C Club, Calz. Zavaleta 116,
Puebla 72150; Chema, Denise or Chiro,
22-33-00-91, 22-33-00-94

La Hielera, Prol Corregidora Nte 350,
Queretaro, QRO C.P. 76160;
Jorge Morelos Rabell, 42-12-15-25

Pista Casino, Hotel Casino de la Selva,
Cuernavaca, Morelos 16507;
Luis Duhart, 73-19-12-38

R/C Racing Club, Obsidiana #2900,
Zapopan, Jalisco 44560;
Fernando Hernandez, 3-616-73-47

Tony's Track, Obregon 364 Sur, Culicán
Sinaloa;
Guillermo Prieto, 67-165708-168141

NETHERLANDS

H.F.C.C. Hollandia, De Werf 60, The
Hague;
G. de Jong, 031-070-3679820

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Chris's BACK LOT Auto Art

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BY CHRIS CHIANELLI

Sorry! I know I said I would turn over the "Back Lot" forum to you creative racers twice a year. OK; so I'm a little late (about two months). My watch stopped—OK? Anyway, here's Luna and my biannual picks; Sophie helped, too. A year's subscription to each of you! And never forget, my friends ...

... life's too short to be a sheep!

KRIS STORM (age 15)
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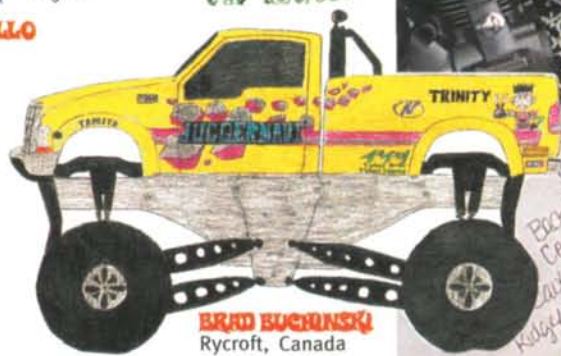


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